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Healthy Eating, Active Living and Healthy Weights, 2012

Health Status Report | Ottawa Public Health | May 2012

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EXECUTIVE SUMMARY

Obesity is a complex health issue with far-reaching causes and contributors. A variety of factors influence energy balance and contribute to the development of obesity. These factors can include individual choices (e.g. calorie intake and expenditure), and the settings in which we live, learn, work and play, which can influence the choices we make including the food we consume and how active we are.

Healthy Eating, Active Living and Healthy Weights, 2012 outlines the prevalence of healthy weights as well as the determinants and impacts of some of its causes and contributors including healthy eating, and active living in the City of Ottawa. Where possible, the report highlights patterns over time and compares data to the rest of Ontario. This report also discusses the inequalities and inequities that exist across individual risk factors and the social determinants of health for patterns of food and beverage consumption, physical activity, and overweight and obesity. Applying a social determinants of health lens is essential for guiding and tailoring public health programming in order to suit the needs of vulnerable populations.

Summary of Findings

Healthy Eating

Healthy eating contributes to quality of life, healthy weights and the prevention of several chronic diseases. Healthy eating practices begin in infancy. In Ottawa, breastfeeding rates (at 6 months) have increased over recent years (2003 to 2009/10) and are higher than in the rest of the province. Approximately, 71% of mothers reported some breastfeeding for at least six months; however, only 41% of mothers exclusively breastfed their last baby for at least the recommended six months.

A large portion of Ottawa youth exhibit unhealthy eating behaviours. Only 60% of students in Ottawa (grades 7 to 12) reported eating breakfast **all** five of the previous school days. Data also indicates that most students are regularly consuming sugar-sweetened beverages with approximately one in ten reporting that they consumed one or more sugar-sweetened beverages per day in the past week. Only one in five students reported that they did not drink sugar-sweetened beverages in the past week. Furthermore, 15% of students drank at least one high-energy caffeinated beverage in the past week. Unfortunately half of Ottawa youth do not consume an adequate amount of vegetables and fruits, similar to youth across the rest of Ontario.

Unhealthy eating practices were also found among the majority of adults living in Ottawa. The majority (76%) of adults living in Ottawa ate meals and snacks outside of the home at least once during the week and did so an average of 2.8 times per week. Eating meals and snacks away from the home is often associated with the consumption of more energy-dense foods and a higher intake of fat and sodium as compared to foods prepared in the home. Restaurants were the most commonly reported place to eat a meal or snack outside of the home, followed by fast food and ready-to-eat foods from the grocery store. In addition, more than half of Ottawa adults are not meeting the recommended vegetable and fruit intake levels as per *Eating Well with Canada's Food Guide* recommendations, which is similar to the rest of Ontario.

Active Living

Active living is also important for an individual's well-being and physical functioning, and reduces the overall risk for obesity and several co-morbidities. However, one in five (22%) Ottawa students (grades 7 to 12) reported meeting physical activity recommendations of 60 minutes per day, which is required to attain the health benefits of regular physical activity. Two out of three students (grades 9 to 12) did not participate in physical education. Students were not active on route to school either, only 20% used active modes to get to school. Furthermore, three out of five students exceeded current *Canadian Sedentary Behaviour Guidelines*, with daily screen times of more than two hours per day.

Similar to youth, most Ottawa adults are struggling to meet current physical activity recommendations. In 2011, approximately half of Ottawa adults met current guidelines, which has remained stable since 2003. A small sample of Ottawa adults whose activity levels were measured found that only 30% averaged 10,000 or more steps-per-day – a target for health benefits based on best practice literature.

Active living can be achieved through domestic, work, leisure time activities and active transportation. In 2009/10, two out of five (42%) Ottawa adults were inactive during their leisure time. Ottawa's adults spent an average of 5.9 hours per weekday sitting. The majority of Ottawa adults were also not active on route to work, with only 10% of working residents walking or cycling as their primary mode of transportation to work. Once at home, nearly half of adults spent 15 hours or more per week watching television or using the computer outside of work or school.

Ottawa residents reported a number of community and individual barriers to being active and maintaining a healthy lifestyle. Ottawa residents reported access to safe streets and other public places as the most important infrastructure-level barrier (64%). The most common service-level barrier was affordable facilities, services and programs (55%). The top three individual-level barriers to physical activity reported by Ottawa residents were lack of time (74%), lack of energy (60%), and lack of interest or motivation (57%).

Healthy Weights

Overweight and obesity have clear public health impacts and can result in a number of adverse health conditions such as hypertension, Type 2 diabetes, heart disease and stroke, some types of cancer (endometrial, breast, prostate and colon), complications of pregnancy, depression and an increase in mortality.

The impacts of overweight and obesity have greater significance among children and youth as chronic diseases may appear earlier and overweight often continues into adulthood. One in five (21%) students (grades 7 to 12) self-reported as either overweight or obese. Compared to the rest of Ontario, students in Ottawa were less likely to self-report as obese. Among adults, 34% reported that they were overweight and an additional 18% reported that they were obese. These rates are likely an underestimation, as self-reported rates have been shown to be lower than those obtained by direct measurement. The proportion of self-reported overweight and obesity was no different between Ottawa adults and those in the rest of Ontario.

Body image and weight control are important components of healthy self-perceptions and body weights. Over one in four (28%) students in Ottawa (grades 7 to 12) felt that they were either "too fat" or "too

thin" and 65% reported that they were making efforts to control their body weight. Physical activity may provide a protective effect on body image. Adults who were active in their leisure time were less likely to consider themselves overweight (51%) compared to adults who were inactive in leisure time (59%).

Health Inequalities

Inequalities and inequities in healthy eating, active living and healthy weights are present in Ottawa and are evident through this report's examination of individual risk factors and the social determinants of health. Although several cases of inequalities exist across risk factors, some important findings emerged and are highlighted below:

- Grade 7 to 12 students from lower socio-economic (SES) families were more likely than higher SES students to report **not eating any** breakfast over the previous five days (21% vs. 9%).
- 50,000 residents in Ottawa cannot afford sufficient and nutritious foods.
- Immigrants were more likely than non-immigrants to report the inability to afford sufficient and nutritious foods.
- There was some indication that immigrants were less active in their leisure time than non-immigrants (39% vs. 49%; inactive).
- Older students (grades 9 to 12) were more likely than younger students (grades 7 to 8) to exceed *Canadian Sedentary Behaviour Guidelines*, with more than two hours of screen time per day (62% vs. 51%).
- Male students (grades 7 to 12) were more likely than female students to report using active modes of transportation on route to school (26% vs. 15%).
- Immigrant students (grades 7 to 12) were more likely than non-immigrant students to self-report as overweight (20% vs. 11%).
- Lower income was associated with a higher prevalence of all barriers to active living.

Addressing Healthy Eating, Active Living, and Healthy Weights in the City of Ottawa

As outlined in this report, the problem of obesity is complex and requires solutions that include creating supportive and healthy environments for residents in the City of Ottawa. Along with this report, Ottawa Public Health has developed a **Healthy Eating, Active Living (HEAL) Strategy** that focuses on three determinants of healthy weights: poor nutrition, inactivity and the cultural pre-occupation with weight.

Through the adoption of its **HEAL Strategy**, Ottawa Public Health acknowledges the importance of the individual and social determinants of health in helping its residents eat healthy, be active and maintain a healthy body image.

GUIDE TO THIS REPORT

Please see the glossary at the end of this document for a list of definitions of terms used in this report. Also note that a "rest of Ontario" or "Ontario-less-Ottawa" estimate is not the same as an overall estimate for the entire province as it does **not** include Ottawa. Any differences between Ottawa and the rest of Ontario should not be interpreted as if Ottawa is different than other individual health units across Ontario; rather that Ottawa is different from the average of individuals across the rest of Ontario.

This report addresses key indicators related to healthy eating, active living and body weight status in the City of Ottawa and provides neighbourhood-level environment data surrounding food and physical activity resources. All data are presented using the most updated data sets available.

Data Presentation

Each indicator profiled in this report summarizes important characteristics, and where possible addresses statistically significant differences between subpopulations (e.g. sex, age, socio-economic status, immigration status, mother tongue), in comparison with the rest of Ontario and over time. Differences are only presented if they are statistically significant ($p<.05$). Each indicator section begins with a preamble discussing why it is of public health importance and the methodology used to measure it. Following the preamble, a "highlights" box is provided that summarizes the key findings including significant differences between subpopulation groups. An indicator table is provided to summarize the historical findings and patterns over time, and finally an indicator figure is provided that summarizes all of the findings in graphical format. The following types of tables and figures are included in this report:

Indicator summary tables

These types of tables provide a summary of all data analysed within the City of Ottawa for the most recent year data are available (first column) and over time where possible (second column). Information on the social determinants of health and individual risk factors for Ottawa is presented in different rows indicated by a row header. The first row contains findings for the entire Ottawa population. The second row where possible provides findings for the rest of Ontario and identifies whether any differences exist compared to Ottawa. The following rows include where possible and/or appropriate information for the following social determinants of health subpopulations: age; sex; socio-economic status; household income; education levels; urban or rural dwelling location; mother tongue; language spoken at home; immigration status; physical activity level; and body mass index (BMI) category.

Indicator summary figures

These figures provide a summary of the indicator within the City of Ottawa for the most recent year data are available, a comparison year, estimates for the rest of Ontario, and then with reportable findings for subgroup comparisons. The vertical lines on each data point represent the 95% confidence intervals surrounding that estimate. Any significant differences ($p<0.05$) between subgroups are presented using square brackets and the ǂ symbol.

Neighbourhood food environment by socio-economic quintiles in the City of Ottawa, 2006

This table is a summary of all food resources for each neighbourhood within the City of Ottawa. The neighbourhoods are grouped by socio-economic quintiles. The table provides a measure of density (number of resources per 1,000 people in the neighbourhood) and number of food resources for each of the following: grocery stores; specialty food stores; convenience stores; fast food outlets; and restaurants. Within each socio-economic quintile the neighbourhoods are ranked first based on density of the resource and then by the number of the food resources in the neighbourhood and the top three are identified using a colour code key. The table also provides the percentage of residents with a BMI ≥25 kg/m^2 and the percentage of residents consuming five or more servings of vegetables and fruits per day.

Neighbourhood recreation environment by socio-economic quintiles in the City of Ottawa, 2006

This table is a summary of all recreation facility resources for each neighbourhood within the City of Ottawa. The neighbourhoods are grouped by socio-economic quintiles. The table provides a measure of density (number of resources per 1,000 people in the neighbourhood) and number of recreation facilities for each of the following: park area (m^2); bike and walk path length (km); indoor recreation facilities; winter outdoor facilities; summer outdoor facilities; and green space area (km^2). Within each socio-economic quintile, the neighbourhoods are ranked first based on density and then by the number of recreation facilities in the neighbourhood and the top three are identified using a colour code key. The table also provides the percentage of residents with a BMI ≥25 kg/m^2 and the percentage of residents who are moderately or highly physically active according to the International Physical Activity Questionnaire (IPAQ).

Data Sources

This report provides a descriptive analysis of nutrition; physical activity and body weight indicators in Ottawa and provides a comparison between Ottawa and the rest of Ontario (where possible). Multiple data sources were used in the preparation of this report including the Canadian Community Health Survey (CCHS), the Ontario Student Drug Use and Health Survey (OSDUHS), the Rapid Risk Factor Surveillance System (RRFSS), and the Ottawa Neighbourhood Study (ONS). The most recently available data files were used; however, the most recent data year available is not consistent across the available data sources. For further details on the data sources, see **Table 1**.

Table 1. Description of Data Sources

Data Source	Description
Canadian Community Health Survey (CCHS)	The Canadian Community Health Survey (CCHS) is a national population household survey. The survey collects information on the health of the Canadian population aged 12 years and older as well as socio-economic data. Data collection commenced in 2000. A broad range of topics are examined in this survey on health status, determinants of health and health system utilization. Data are available for Ottawa from 2000 to 2010. The CCHS is conducted by Statistics Canada.
Ontario Student Drug Use and Health Survey (OSDUHS)	The Public Health Monitoring of Risk Factors in Ontario-Ontario Student Drug Use and Health Survey (OSDUHS) surveys students in grades 7 through 12, enrolled in both the English and French public and Catholic school systems through random selection of schools and active parental consent. In 2011, 1,015 Ottawa students completed the survey. The survey is conducted by the Centre for Addiction and Mental Health (CAMH).
Ottawa Neighbourhood Study (ONS)	Environment characteristics were collected by the Ottawa Neighbourhood Study (ONS) (www.neighbourhoodstudy.ca), a large study of neighbourhoods and health outcomes in Ottawa. Neighbourhoods were defined based on natural barriers, similarity in socioeconomics and demographics, Ottawa Multiple Listing Services maps, and participatory mapping feedback from a steering group. Most neighbourhoods contained ≥4,000 people. Objectively measured environmental data were collected in 2006 and re-evaluated in 2008 using the following data and methods: 1) 2006 Canadian census household data; 2) geographical information systems (GIS) data from DMTI Spatial Inc., the City of Ottawa, and the National Capital Commission (NCC); 3) telephone contact with businesses; 4) web-based research (e.g., Canada 411, websites, Google Maps); 5) team knowledge of local resources; and 6) field research and validation (e.g., car, walking, bicycle).
Rapid Risk Factor Surveillance System (RRFSS)	The Rapid Risk Factor Surveillance System (RRFSS) is an ongoing telephone survey conducted for Ottawa Public Health by the Institute for Social Research at York University. The survey is administered to adults aged 18 and older in various health units across Ontario. Data collection for Ottawa began in 2001 and at the time of this report, data were available for Ottawa from 2001 to 2011. Ottawa households are randomly selected and about 100 residents are surveyed monthly about health-risk behaviours, as well as knowledge, attitudes, and awareness of different health topics of public health importance.

Data Analysis

Data were analyzed using Stata v12 and IBM SPSS Statistics v19. Significance testing was conducted using Chi-square testing at a significance level of $p<0.05$. Multiple comparisons between pairs were performed and adjusted using a Bonferroni correction. Findings that were statistically significant after adjustment are reported in the tables, unless otherwise stated. Findings that were significant prior to adjustment are presented in the table, but with the acknowledgement that they are important, but not statistically significant differences.

Ninety-five percent confidence intervals (95% CI) are presented following the estimate in smaller font and within brackets.

ABBREVIATIONS

BMI – body mass index

CAMH – Centre for Addiction and Mental Health

CCHS – Canadian Community Health Survey

CHMS – Canadian Health Measures Survey

CI – confidence interval

GIS – geographical information systems

IPAQ – International Physical Activity Questionnaire

LICO – low income cut-off

METs – metabolic equivalents

MVPA – moderate-to-vigorous physical activity

NAICS – North American Industry Classification System

NCC – National Capital Commission

ONS – Ottawa Neighbourhood Study

OPHS – Ontario Public Health Standards

OSDUHS – Ontario Student Drug Use and Health Survey

RRFSS – Rapid Risk Factor Surveillance System

SES – socio-economic status

VPA – vigorous physical activity

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CHAPTER 1

Introduction

1. INTRODUCTION

This report is one of a series of health status reports published by Ottawa Public Health. These comprehensive reports are an important part of the public health mandate to report on population health status and provide the evidence necessary to identify trends and health issues of public health significance in Ottawa. Local evidence helps tailor planning and decision making to enhance the health of the Ottawa population.

This particular report is an epidemiological overview of three of the five major risk factors associated with chronic diseases: healthy eating; active living and healthy weights. The data in this report support the Ontario Public Health Standards (OPHS) surveillance requirement to monitor the magnitude of these risk factors over time, and to identify emerging trends and priority populations. The OPHS' goal related to chronic disease prevention is:

- **To reduce the burden of preventable chronic disease of public health importance**

The assessment and surveillance requirements of this chronic disease prevention standard as stated in the OPHS also state that boards of health shall monitor food affordability.

The Healthy Eating, Active Living and Healthy Weights, 2012 report acknowledges that obesity is a complex health outcome with multifaceted and far-reaching causes and contributors. A variety of factors can influence energy balance and contribute to the development of obesity. These factors can include individual choices (i.e. calorie intake and expenditure), but also components of the built and social environments that have the capacity to impact the health behaviours of individuals. The settings in which we live, learn, work and play can influence the choices we make including the food we consume and how active we are. As such, the report provides data analyses on the prevalence, determinants and impacts of food consumption, physical activity, and overweight and obesity in the City of Ottawa and where possible, discusses patterns over time and compared to the rest of Ontario.

Food Consumption in Canada

Fruit and vegetables are an important source of dietary fibre, vitamins and minerals. A diet rich in fruits and vegetables has been shown to be associated with reduced risk for stroke[1], heart disease[2], diabetes[3], and certain cancers[4].

In 2010, less than half (43%) of Canadians, 12 years of age and older reported that they ate five or more servings of vegetables and fruits per day[5]. Canadian females were more likely than Canadian males to consume five or more daily servings of fruits and vegetables (50% versus 36%).[5]

According to the 2004 Canadian Community Health Survey (CCHS) – Nutrition component, Canadians consumed a daily average of 110 grams of sugar equivalent to 26 teaspoons.[6] Thirty percent of this sugar intake was attributed to vegetable and fruit consumption, while 35% was derived from the "other food" category which includes soft drinks, salad dressings and candy.[6] Beverages such as milk, fruit juice and soft drinks were responsible for 44% of child and adolescent consumption of sugar and 35% of adult consumption.[6]

Canadian data has shown that the total number of calories consumed by both males and females is associated with increased odds of obesity.[7] Further, in males, higher fibre intake is associated with lower odds of obesity and obese males have a significantly higher intake of dietary energy from total fat, including saturated and monounsaturated than non-obese males.[7]

Physical Activity in Canada

Regular physical activity is protective against premature mortality and several chronic diseases including cardiovascular disease, stroke, hypertension, colon cancer, breast cancer, and Type 2 diabetes.[8] Furthermore, a clear dose-response relationship exists between physical activity levels and the risk of chronic diseases and premature mortality whereby greater amounts and more intense physical activity is associated with a greater reduction in risk.[8]

In addition to poor health outcomes, physical inactivity is also associated with high economic costs. In Canada in 2001, the economic costs of physical inactivity were estimated at $5.3 billion or 2.6% of the total direct health care expenditures and $3.7 billion in indirect costs.[9]

Canadian physical activity levels range depending on whether they are self-reported or directly measured. In the 2009 CCHS, 49% of adult females and 56% of adult males self-reported that they were moderately active during their leisure time[10] as compared to 14% of adult females and 17% of adult males who met current Canadian Physical Activity Guidelines[11] using directly measured accelerometry data from the 2009 Canadian Health Measures Survey (CHMS)[12].

Physical activity levels amongst Canadian children are even more concerning. While there was a greater percentage of Canadians aged 12 to 19, who self-reported that they were at least moderately active in their leisure time (78% of males and 65% of females)[10], directly measured physical activity levels were much lower. According to the 2009 CHMS, an estimated 9% of boys and 4% of girls (6 to 19 years of age) accumulated at least 60 minutes of moderate-to-vigorous physical activity (MVPA) on at least six days a week.[13]

In addition to poor physical activity levels, adults spend approximately 9.5 hours a day, on average, in sedentary pursuits, equivalent to around 69% of their waking hours.[12] Furthermore, Canadian children are spending the majority of their waking hours in sedentary pursuits, equating to approximately 8.6 hours per day.[13]

Overweight and Obesity in Canada

Overweight and obesity are conditions of excessive body fat that are associated with increased risk of several chronic diseases and premature mortality.[14-17] Between 2000 and 2008, the economic burden of obesity in Canada was estimated to have increased by $735 million annually, from $3.9 to $4.6 billion.[18] A variety of factors can influence energy balance (energy in and out) and contribute to the development of obesity; these include biological, behavioural, environmental, economical, and social influences.[19]

Obesity rates also differ depending on whether weight and height (used to determine body mass index (BMI) as $kg \cdot m^2$) are self-reported or directly measured. In 2009, 19% of adult males and 17% of adult

females were considered obese using self-reported height and weight from the CCHS[20], while measured height and weight from the CHMS identified that 24% of adult men and 24% of adult women were obese.[21]

In 2009, based on self-reported height and weight from the CCHS, 20% of Canadian youth (12-17 years) were estimated to be overweight or obese.[22] On the other hand, using measured height and weight collected in the CHMS, just over 26% were estimated to be overweight or obese.[23]

Social Determinants of Health

The World Health Organization defines the social determinants of health as the "conditions in which people are born, grow, live, work and age, including the health system".[24] The conditions of which we are exposed are influenced by the distribution of financial and political resources across various levels including local, provincial, national and international levels. The social determinants of health are largely responsible for health inequalities and inequities that exist between groups of individuals within a population.[24] Inequalities refer to a difference or variation in health outcomes/behaviours that may exist, whereas health inequities refer to inequalities in health that are unfair resulting from some form of social injustice. While health inequities likely do exist in Ottawa, the data presented in this report do not directly capture facets of social injustice and thus, conclusions regarding their presence cannot be made.

The social determinants of health include the following[25]:

1. Income and income distribution
2. Education
3. Unemployment and job security
4. Employment and working conditions
5. Early childhood development
6. Food insecurity
7. Housing
8. Social exclusion
9. Social safety network
10. Health services
11. Aboriginal status
12. Gender
13. Race
14. Disability

Within this report, we have attempted to highlight where possible how health behaviours and outcomes may differ based on indicators of the social determinants of health in an attempt to highlight areas of possible inequity. The social determinants of health included in this report are: sex, education level, household income, and socio-economic status. The indicators highlighted are by no means comprehensive, but do identify future areas of interest with respect to program delivery. Along with the social determinants of health we have also included individual risk factors that may impact an individual's ability to eat healthy, be active and maintain a healthy body weight.

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CHAPTER 2

Healthy Eating

2. HEALTHY EATING

Healthy eating is important to increase quality of life and for the reduction of an individual's overall risk for several chronic diseases such as overweight/obesity. Healthy eating is achieved through the consumption of appropriate amounts and types of foods and through limiting the consumption of foods and beverages that are high in calories, fats, sugar and salt (sodium). This section of the report provides data on various measures of healthy eating including breastfeeding, breakfast consumption, intake of sugar sweetened or highly caffeinated beverages, vegetable and fruit consumption, and prepared or restaurant foods eaten outside of the home. This section also provides information regarding the cost of nutritious eating in Ottawa for a family of four, the number of individuals accessing the Ottawa Food Bank, the prevalence of food security, and the distribution of food resources across all Ottawa neighbourhoods.

We have profiled where possible and appropriate, the information that is currently available at the local Ottawa level. However, it is important to acknowledge that the measures presented herein are not necessarily a comprehensive or all-inclusive list of factors important to healthy eating practices.

Canada's Food Guide Recommendations

Eating Well with Canada's Food Guide, produced by Health Canada, is a resource offered to the public that defines and promotes healthy eating for Canadians. The Guide recommends the number of servings under four food groups: vegetables and fruits, grain products, milk and alternatives, and meat and alternatives that children, teens and adults should consume on a daily basis. Table 2 provides a summary of Canada's food guide. *Eating Well with Canada's Food Guide* can be accessed using the following URL: www.healthcanada.gc.ca/foodguide

While these guidelines are meant to help meet Dietary Reference Intakes and prevent chronic disease, measuring dietary intake is complex due to diverse food availabilities, food preferences, definitions of portion sizes, day-to-day and seasonal variances in consumption patterns.

Table 2. *Eating Well with Canada's Food Guide* **recommendations for servings per day.**

	Children			Teens		Adults			
	2-3 years	4-8 years	9-13 years	14-18 years		19-50 years		51+ years	
	Girls and Boys			Females	Males	Females	Males	Females	Males
Vegetables and fruits	4	5	6	7	8	7-8	8-10	7	7
Grain products	3	4	6	6	7	6-7	8	6	7
Milk and alternatives	2	2	3-4	3-4	3-4	2	2	3	3
Meat and alternatives	1	1	1-2	2	3	2	3	2	3
The eating pattern also includes a small amount (30 to 45 mL or about 2 to 3 tablespoons) of unsaturated fat each day.									

Source: *Eating Well with Canada's Food Guide*, 2008.

Breastfeeding

Breastfeeding is a natural way of providing infants and toddlers the appropriate nutrition they need for healthy growth and development and provides emotional benefits to both mother and child. In addition, breast milk provides immunological advantages and has been shown to provide many benefits including a potential reduction in the risk of obesity and Type 2 diabetes later in life, and post-partum weight loss in mothers who breastfeed.[26-28] A recent study of Australian children and adolescents found that breastfeeding for six months or more appears to be protective against overweight and obesity among children and adolescents.[29]

Infants should be exclusively breastfed to six months of age and then continue to be breastfed with appropriate complementary feeding to two years of age and beyond. Exclusive breastfeeding means that an infant is fed only breast milk; the infant receives no other liquids (not even water) and no solids.[30]

Data on breastfeeding duration in Ottawa and Ontario are collected in the CCHS. Women aged 15 to 55 years who gave birth in the past five years were asked about breastfeeding initiation and duration for their last child born. For the purposes of this report, the breastfeeding rate at six months for women aged 15 to 49 years is reported for both exclusive and non-exclusive (breastfeeding with supplementation of other liquid or solid food) breastfeeding. Those women who are still breastfeeding are excluded since the length of time that they have been breastfeeding cannot be determined from the survey. Detailed analyses of breastfeeding such as intention to breastfeed, initiation rates, duration and reasons for stopping will be profiled in an upcoming report on reproductive and infant health.

Table 3. Breastfeeding rates by social determinants of health, Ottawa and the rest of Ontario, 2003 – 2009/10.

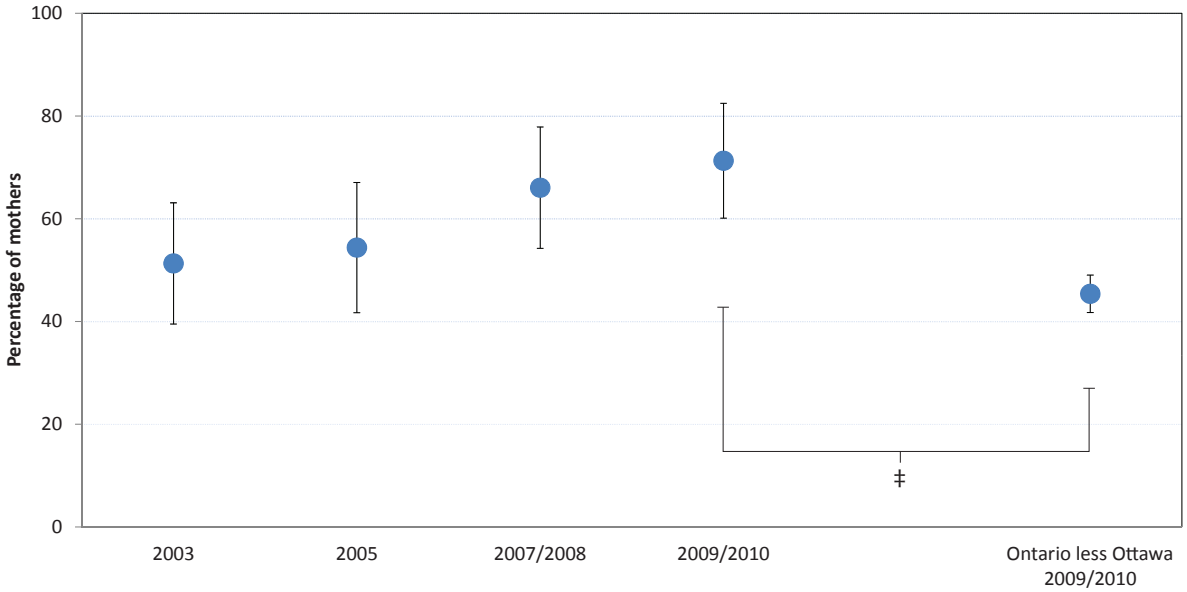
HIGHLIGHTS

- The majority (71%) of Ottawa mothers **non-exclusively** breastfed their last baby for at least six months while less than half (41%) of mothers **exclusively** breastfed their last baby for at least six months.
- Breastfeeding rates (six month and six month exclusive) increased from 2003 to 2009/10 in Ottawa and are higher than the rest of the province.

	Breastfeeding (6 month duration) in 2009/10	Historical patterns in breastfeeding (2003 – 2009/10)
Total sample	71.3% (60.1%, 82.5%) of Ottawa mothers who had given birth in the past 5 years non-exclusively breastfed their baby for at least 6 months. 41.0% (29.2%, 52.8%) of m others exclusively breastfed their baby for at least 6 months.	Between 2003 and 2009/10, the proportion of Ottawa mothers who had given birth in the past 5 years and non-exclusively breastfed their baby for at least 6 months increased from 51.3% (39.5%, 63.1%) in 2003, to 54.4% (41.7%, 67.1%) in 2005, 66.1% in 2007/08 (54.3%, 77.9%) , and 71.3% (60.1%, 82.5%) in 2009/10. Exclusive breastfeeding for 6 months or longer also increased from 18.1%* (8.3%, 27.9%) in 2003 and 17.3%* (8.7%, 25.9%) in 2005, to 28.6%* (15.7%, 41.4%) in 2007/08 and 41.0% (29.2%, 52.8%) in 2009/10.
Rest of Ontario	In the rest of Ontario, 45.4% (41.8%, 49.1%) of mothers non-exclusively breastfed their baby for at least 6 months and 24.1% (20.7%, 27.4%) exclusively breastfed their baby for at least 6 months. Compared to the rest of Ontario, Ottawa mothers were more likely to partially and exclusively breastfeed.	A similar pattern was seen in 2007/08 and 2003 for breastfeeding duration of at least 6 months and a similar pattern was seen only in 2009/10 for exclusive breastfeeding of at least 6 months.

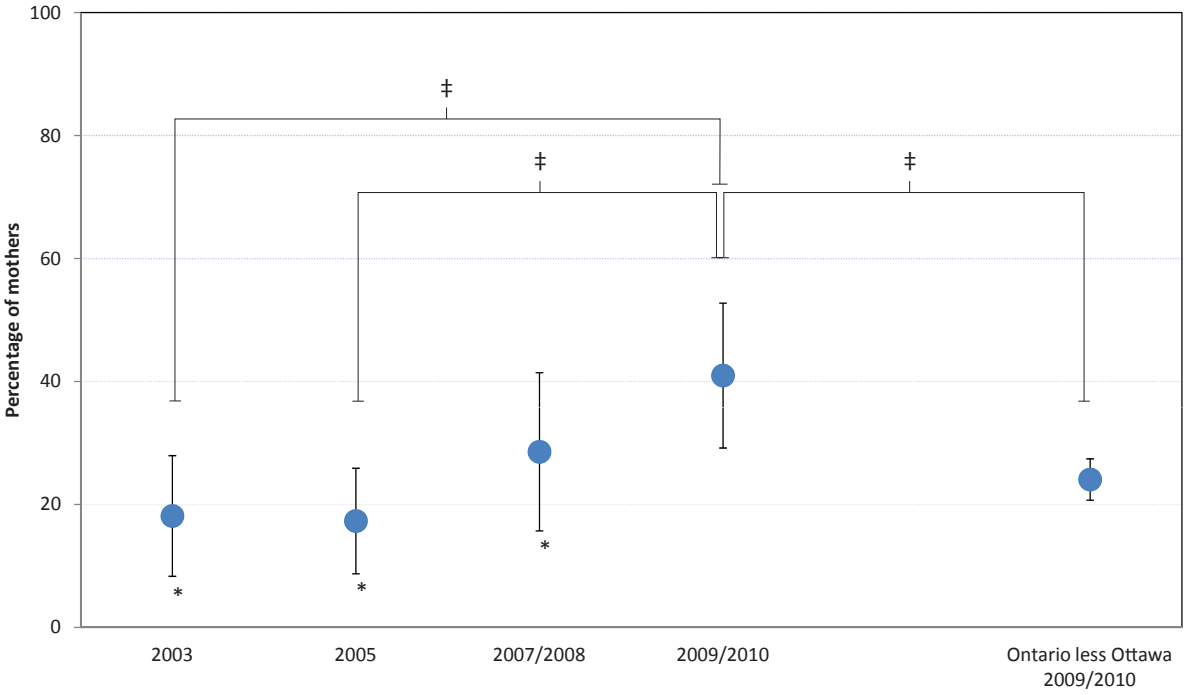
***=Interpret with caution due to high sampling variability.**

Figure 1. Percentage of mothers who non-exclusively breastfed their last baby for at least six months, Ottawa (2003 – 2009/10) and the rest of Ontario (2009/10).



Data source: Canadian Community Health Survey (2003, 2005, 2007/08, 2009/10). Ontario Share File. Statistics Canada.
‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.

Figure 2. Percentage of mothers who exclusively breastfed their last baby for at least six months, Ottawa (2003-2009/10) and the rest of Ontario (2009/10).



Data source: Canadian Community Health Survey (2003, 2005, 2007/08, 2009/10). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.

Breakfast Consumption among Youth

Daily breakfast consumption helps increase the likelihood that students meet daily nutritional requirements and is associated with improved academic performance, school attendance and reduced lateness.[31] Daily breakfast consumption also decreases the likelihood of being overweight.[31] The 2009 and 2011 OSDUHS asked students (grades 7 to 12) on how many of the last five school days did they eat breakfast, either at home, on the way to school, or at school before classes (more than a glass of milk or fruit juice).

HIGHLIGHTS

- Almost 60% of grade 7 to 12 students in Ottawa reported eating breakfast on **all** five of the previous school days.
- Ottawa students appeared to consume breakfast more frequently than students in the rest of Ontario.
- There is some indication that males were more likely to consume breakfast more frequently than females.
- Lower SES students were more likely than higher SES students to report **not eating any** breakfast over the previous five days.
- There was some indication that students whose parents have some post-secondary education were more likely to consume breakfast.
- No significant differences in breakfast consumption were observed by grade, immigration status, language spoken at home, or BMI category.

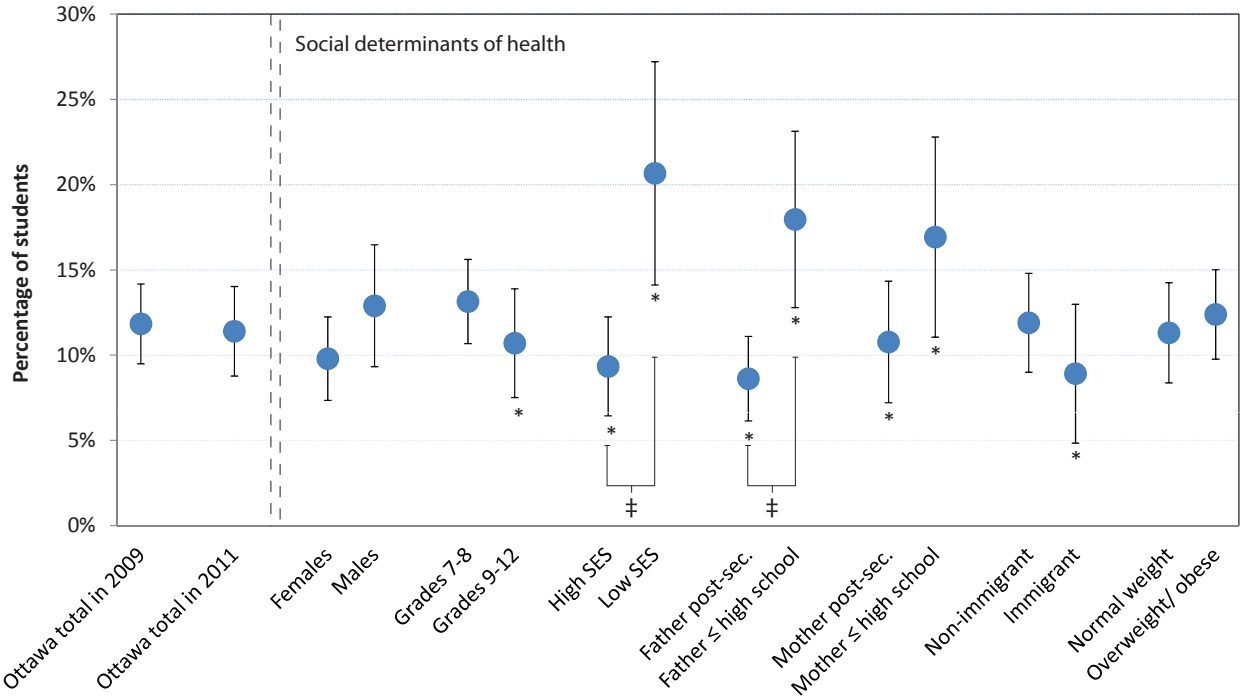
Table 4. Breakfast consumption rates of students (grades 7 to 12) by social determinants of health, Ottawa and the rest of Ontario 2009 – 2011.

	Breakfast consumption in 2011 (Grades 7 to 12)	Historical patterns in breakfast consumption (2009 vs. 2011)
Ottawa students	Overall, 57.6% (51.3%, 63.6%) of students in Ottawa reported eating breakfast on all of the past 5 school days. An additional 14.3% (11.4%, 17.6%) reported having breakfast 3-4 of the previous 5 days, 16.8% (14.5%, 19.4%) reported consuming breakfast 1-2 of the previous 5 days, and 11.4% (8.8%, 14.7%) reported that they had not consumed breakfast in the previous 5 days.	A similar pattern of breakfast consumption was seen in 2009.
Rest of Ontario	Data are not releasable for 2011 at the time of this publication.	In 2009, students in Ottawa (59.1% (54.5%, 63.5%)) were more likely to report that they had eaten breakfast on all of the previous 5 school days compared to students in the rest of Ontario (50.8% (49.2%, 52.5%)). Students in the rest of Ontario were more likely than students in Ottawa to report eating breakfast on 3 to 4 days (15.7% (14.6%, 16.9%) vs. 12.6% (11.2%, 14.3%)) and on none (15.5% (14.2%, 16.8%) vs. 11.8% (9.5%, 14.7%)) of the previous 5 school days.
Social Determinants of Health (for Ottawa sample)		
Sex	Females were more likely than males to report consuming breakfast 1 to 2 days over the previous five school days (22.5% (19.8%, 25.5%) vs. 11.5% (9.3%, 14.1%)). No other differences in breakfast consumption frequency were observed by sex.	In 2009, similar differences were observed with the addition that more males than females reported consuming breakfast on all of the previous 5 days (65.4% (60.6%, 70.0%) vs. 52.3% (46.5%, 58.0%)).
Grades	No differences were observed between grades 7-8 versus grades 9-12.	Similarly, there were no differences in breakfast consumption by grade in 2009.

	Breakfast consumption in 2011 (Grades 7 to 12)	Historical patterns in breakfast consumption (2009 vs. 2011)
Family SES	More low SES students (20.7%* (14.1%, 29.2%)) reported that they had **not** eaten breakfast over the previous 5 school days compared to high SES students (9.3%*(6.4%, 13.4%)). In addition, more high students (61.3% (53.5%, 68.5%)) reported that they had eaten breakfast on **all** 5 of the past school days compared to low SES students (41.6% (32.2%, 51.7%)).	Family SES was not available in 2009.
Father's education	Students whose fathers had a high school education or less (18.0%*(12.8%, 24.6%)) were more likely to report that they had **not** eaten breakfast over the previous 5 school days compared to students whose fathers had some form of post-secondary education (8.6%* (6.1%, 12.0%)).	There were no statistical differences in breakfast consumption by paternal education in 2009.
Mother's education	No differences were observed by maternal education level.	Students whose mothers had some post-secondary education (62.7% (57.3%, 67.7%)) were more likely to report that they had eaten breakfast on **all** 5 of the previous school days than students whose mothers had a high-school education or less (44.1% (36.5%, 51.9%)).
Immigration status	No differences were observed by immigration status.	Similarly, there were no differences in breakfast consumption by immigration status in 2009.
Language Spoken at home	No differences were observed by language spoken at home.	Similarly, there were no differences in breakfast consumption by language spoken at home in 2009.
Body mass index	No differences were observed by BMI category.	Similarly, there were no differences in breakfast consumption by BMI category in 2009.

*=Interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.

Figure 3. Percentage of students (grades 7 to 12) who reported that they had not eaten breakfast on any of the previous five school days by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Post-sec – post-secondary, SES – socio-economic status.

Sugar-Sweetened Beverage Consumption among Youth

Drinking sugar-sweetened beverages even once a week increases the risk of becoming overweight or obese.[32] One 355mL can of soda pop contains the equivalent of 10 teaspoons of sugar, but no vitamins, minerals or protein, therefore making this beverage selection energy dense and nutrient-poor which increases the propensity for weight gain. The 2009 and 2011 OSDUHS asked students in grades 7 to 12 how often in the last seven days they drank a can, bottle or glass of soda pop or sport drink such as Coke, Pepsi, Sprite or Gatorade, not including fruit juice.

HIGHLIGHTS

- Only one in five (21%) students (grades 7 to 12) did not drink sugar-sweetened beverages in the past week. Just over one in ten (12%) consumed one or more per day.
- In 2009, students in Ottawa were more likely than students in the rest of Ontario to report they did not consume sugar-sweetened beverages.
- Males were more likely than females to drink (and in greater quantities) sugar-sweetened beverages.
- There was some indication that students in grades 7 and 8 might have been drinking fewer sugar sweetened beverages than students in grades 9 to 12.
- There was some indication that sugar sweetened beverages were consumed less when mothers had higher education levels; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences were observed by family SES, paternal education level, immigration status, language spoken at home, or BMI category.

Table 5. Sugar-sweetened beverage consumption rates of students (grades 7 to 12) by social determinants of health, Ottawa and the rest of Ontario 2009 – 2011.

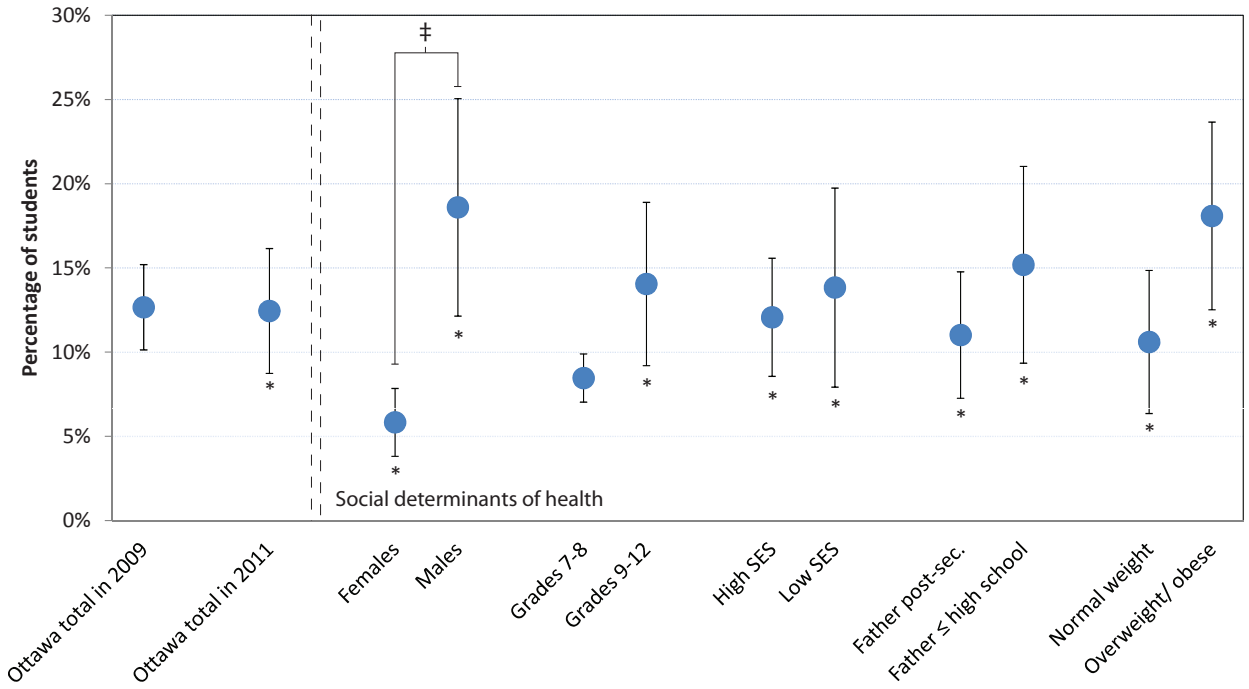
	Sugar-sweetened beverage consumption in 2011 (Grades 7 to 12)	Historical patterns in sugar-sweetened beverage consumption (2009 vs. 2011)
Ottawa students	Overall, 20.5% (17.1%, 24.3%) of students in Ottawa reported **not** drinking any sugar-sweetened beverage in the 7 days prior to the survey. An additional 25.8% (19.8%, 32.9%) reported having **one** sugar-sweetened beverage in previous 7 days, 34.1% (30.3%, 38.2%) reported drinking **2-4** sugar-sweetened beverages, 7.2% (5.5%, 9.3%) reported drinking **5-6** sugar sweetened beverages, and 12.4%* (8.7%, 17.4%) reported that they had consumed **one or more** sugar-sweetened beverages per day in the previous 7 days.	A similar pattern of sugar-sweetened beverage consumption was seen in 2009.
Rest of Ontario	Data are not releasable for 2011 at the time of this publication.	In 2009, Ottawa students were more likely than those in the rest of Ontario to report that they consumed **no** sugar-sweetened beverages in the 7 days prior to the survey (20.0% (17.4%, 22.8%) vs. 16.0% (14.9%, 17.2%)).
Social Determinants of Health (for Ottawa sample)		
Sex	Males were more likely than females to report drinking sugar-sweetened beverages **5 to 6 times** (10.5% (8.0%, 13.8%) vs. 3.5%* (2.0%, 6.1%)) and **one or more** per day (18.6%* (12.1%, 27.4%) vs. 5.8%* (3.8%, 8.8%)) in the previous 7 days.	A similar pattern was observed in 2009. In addition, there were more females than males who reported drinking **no** sugar-sweetened beverages in the previous 7 days (27.9% (23.5%, 32.7%) vs. 12.6% (10.8%, 14.6%)).

	Sugar-sweetened beverage consumption in 2011 (Grades 7 to 12)	Historical patterns in sugar-sweetened beverage consumption (2009 vs. 2011)
Grades	No differences in the consumption of sugar-sweetened beverages between grades 7-8 and 9-12 were observed.	In 2009, students in grades 7-8 (27.9% (24.5%, 31.6%)) were more likely than students in grades 9-12 (20.4% (17.6%, 23.4%)) to report that they had consumed sugar-sweetened beverages **once** in the previous 7 days. Students in grades 7-8 (24.9% (19.8%, 30.9%)) were also more likely than students in grades 9-12 (17.9% (15.1%, 21.2%)) to report they had **not** consumed any sugar-sweetened beverages once in the previous 7 days; however, this was not significant.
Family SES	No differences in the consumption of sugar-sweetened beverages were observed between high and low SES students.	Family SES was not available in 2009.
Father's education	No differences in sugar-sweetened beverage consumption were observed for paternal education level.	Similarly there were no differences in sugar-sweetened beverage consumption by paternal education in 2009.
Mother's education	No differences in sugar-sweetened beverage consumption were observed for maternal education level.	In 2009, students whose mothers had some post-secondary education were more likely than those whose mothers had a high school education or less to report **not** drinking any sugar-sweetened beverages in the past 7 days; however, this difference was not significant (20.8% (17.8%, 24.2%) vs. 14.0%* (9.4%, 20.3%)).
Immigration status	No differences in sugar-sweetened beverage consumption were observed for immigration status.	Similarly there were no differences in sugar-sweetened beverage consumption by immigration status in 2009.

	Sugar-sweetened beverage consumption in 2011 (Grades 7 to 12)	Historical patterns in sugar-sweetened beverage consumption (2009 vs. 2011)
Language spoken at home	No differences in sugar-sweetened beverage consumption were observed for language spoken at home.	Similarly there were no differences in sugar-sweetened beverage consumption by language spoken at home in 2009.
Body mass index	No differences in sugar-sweetened beverage consumption were observed between BMI categories.	Similarly there were no differences in sugar-sweetened beverage consumption by BMI category in 2009.

*=interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.

Figure 4. Percentage of students (grades 7 to 12) who reported that they drank one or more sugar-sweetened beverages per day in the previous seven days by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Post-sec – post-secondary, SES – socio-economic status.

High-Energy Caffeinated Beverage Consumption among Youth

In children and adolescents, drinking high-energy caffeinated beverages has been shown to increase the risk of caffeine-induced headaches[33], interrupted sleep[34] and hypertension[35]. The 2011 OSDUHS asked students (grades 7 to 12) how often in the last seven days they drank a can of high-energy caffeine drinks such as Redbull, Rockstar, Full Throttle, Monster, etc. One 8.3oz can of Redbull contains 66.7 mg of caffeine per serving.[36] Health Canada recently amended its caffeine guidelines to a maximum of 85 mg per day for children aged 10 to 12 years and a maximum of 2.5 mg/kg body weight for youth aged 13 years and older .[37]

HIGHLIGHTS

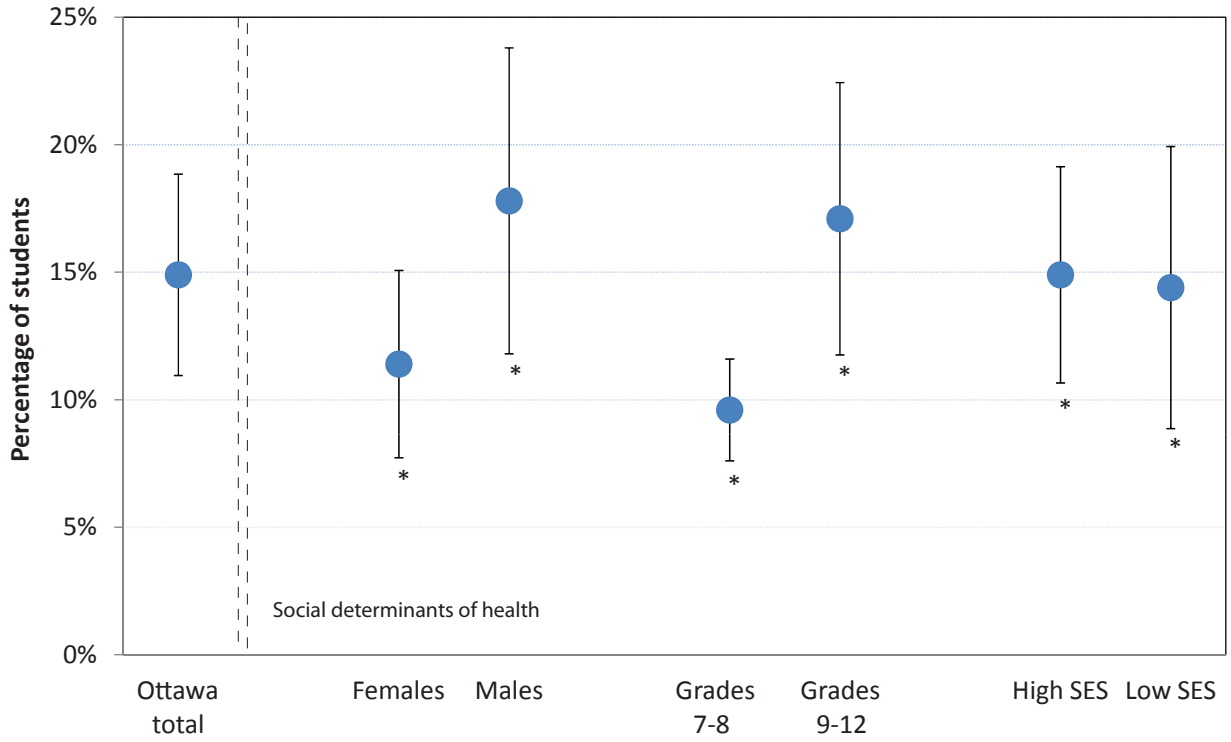
- Half of students in grades 7 to 12 reported that they **did not** drink any high-energy caffeinated beverages in the past year.
- Immigrants were more likely to report that they **did not** consume any high-energy caffeinated beverages in the past year.
- There was some indication that high-energy caffeinated beverages were consumed less frequently by students in grades 7 to 8 (vs. grades 9 to 12) and those who speak a language other than English or French; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences were observed by sex, family SES, parental education level, or BMI category.

Table 6. High-energy caffeinated beverage consumption rates of students (grades 7 to 12) by social determinants of health, Ottawa, 2011.

High-energy caffeinated beverage consumption in 2011 (Grades 7 to 12)	
Ottawa students	Overall, 14.9% (11.0%, 20.0%) of students in Ottawa report drinking one or more high-energy caffeinated beverages in the 7 days prior to the survey. An additional 35.5% (30.6%, 40.8%) reported having none in the previous 7 days, but at least one in the previous year and 49.6% (42.5%, 56.7%) reported **not** drinking **any** high-energy caffeinated beverages in the previous year.
Social Determinants of Health (for Ottawa sample)	
Sex	There were no differences in high-energy caffeinated beverage consumption between sexes.
Grades	There is some indication that students in grades 9-12 (17.1%* (11.7%, 24.2%)) more frequently drank high-energy caffeinated beverages (**one or more** in the past 7 days) compared to students in grades 7-8 (9.6% (7.6%, 12.1%)); however, likely due to small sample sizes; this difference was not statistically significant.
Family SES	No differences in high-energy caffeinated beverage consumption were observed between high and low SES students.
Father's education	No differences in high-energy caffeinated beverage consumption were observed for paternal education level.
Mother's education	No differences in high-energy caffeinated beverage consumption were observed for maternal education level.
Immigration status	Immigrants (68.5% (50.0%, 82.6%)) were more likely to report that they had not consumed any high-energy caffeinated beverages in the previous year compared to non-immigrants (45.8% (38.9%, 52.8%)).
Language spoken at home	There is some indication that students who spoke a language other than English or French at home (70.3% (51.7%, 84.0%)) were more likely than students who spoke English only at home (44.6% (36.8%, 52.7%)) to report never drinking high-energy caffeinated beverages in the past year, however, likely due to small sample sizes, this difference was not statistically significant.
Body mass index	No differences in high-energy caffeinated beverage consumption were observed between BMI categories.

*=interpret with caution due to high sampling variability. BMI – body mass index, SES – socioeconomic status.

Figure 5. Percentage of students in grades 7 to 12 who reported that they drank at least one high-energy caffeinated beverage in the previous seven days by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. SES – socio-economic status.

Vegetable and Fruit Consumption

Vegetables and fruits are important components of a healthy diet and their consumption can prevent a wide range of diseases including diabetes, several types of cancer and cardiovascular disease.[38-41] The benefits incurred by the consumption of vegetables and fruits are related to improvements in fibre intake, vitamin and mineral content, and portion control.[42]

The CCHS asks a short food frequency questionnaire that includes seven questions on the frequency of vegetable and fruit consumption, but does not assess the quantity consumed. The frequency of vegetable and fruit consumption does not exactly translate to servings per day; rather, it is the number of times vegetables and fruits are consumed. The questionnaire has been shown to have moderate reliability and validity.[43]

In general, the CCHS questionnaire is not appropriate to assess whether the population is meeting age and sex specific recommendations according to *Canada's Food Guide.* However, CCHS data can be used to monitor population patterns in the frequency of vegetable and fruit consumption over time.

Vegetable and Fruit Consumption among Youth

HIGHLIGHTS

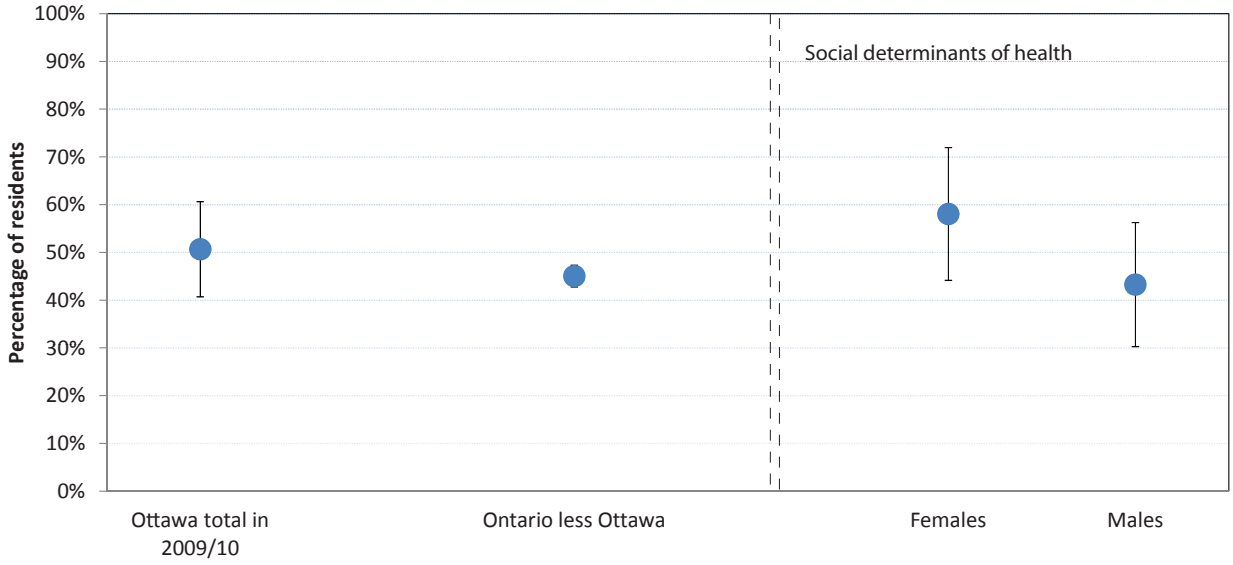
- Half (51%) of Ottawa youth (aged 12 to 19 years) consumed vegetables and fruits five or more times a day, similar to the rest of Ontario.
- There was some indication that female youth consumed vegetables and fruits more frequently than males; however, additional data are needed to confirm whether these differences truly exist.

Table 7. Vegetable and fruit consumption among youth (12 to 19 years) by social determinants of health, Ottawa and the rest of Ontario, 2003 – 2009/10.

	Vegetable and fruit consumption in youth in 2009/10 (12 to 19 years of age)	Historical patterns in vegetable and fruit consumption in youth(2003 to 2009/10)
Total sample	In 2009/10, half of Ottawa youth aged 12 to 19 years (50.7% (40.7%, 60.6%)) consumed five or more vegetables and fruits on a daily basis.	Similar vegetable and fruit consumption patterns were seen among youth between 2003 and 2007/08.
Rest of Ontario	Ottawa youth were not different from the rest of the province, where 45.1% (42.8%, 47.3%) of youth report consuming ≥5 vegetables and fruits daily.	There were no differences in vegetable and fruit consumption between Ottawa youth and the rest of the province between 2003 and 2007/08.
Social Determinants of Health (for Ottawa sample)		
Sex	There is some indication that fewer male youth are consuming ≥5 vegetables and fruits (43.3% (30.3%, 56.3%)) compared to female youth (58.1% (44.2%, 72.0%)); however this difference is not statistically significant.	A similar pattern in vegetable and fruit consumption was seen between 2003 and 2007/08.

Data note: Only reportable findings are shown. In 2009/10 information on vegetable and fruit consumption in youth is not reportable by body mass index, household income, food security status, urban/rural status, mother tongue language, or immigration status due to small sample sizes.

Figure 6. Percentage of youth (12 to 19 years) who consumed at least five vegetables and fruits daily total and by sex, Ottawa and the rest of Ontario, 2009/10.



Data source: Canadian Community Health Survey (2009/10). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.

Vegetable and Fruit Consumption among Adults

HIGHLIGHTS

- Less than half (45%) of Ottawa adults (aged ≥20 years) consumed vegetables and fruits five or more times a day, similar to the rest of Ontario.
- Women were more likely than men to consume five or more vegetables and fruits a day.
- There was some indication that food insecure households were less likely to consume ≥5 vegetables and fruits per day (in 2007/08).
- No significant differences were observed by age, education, household income, urban/rural location, mother tongue language, or BMI category.

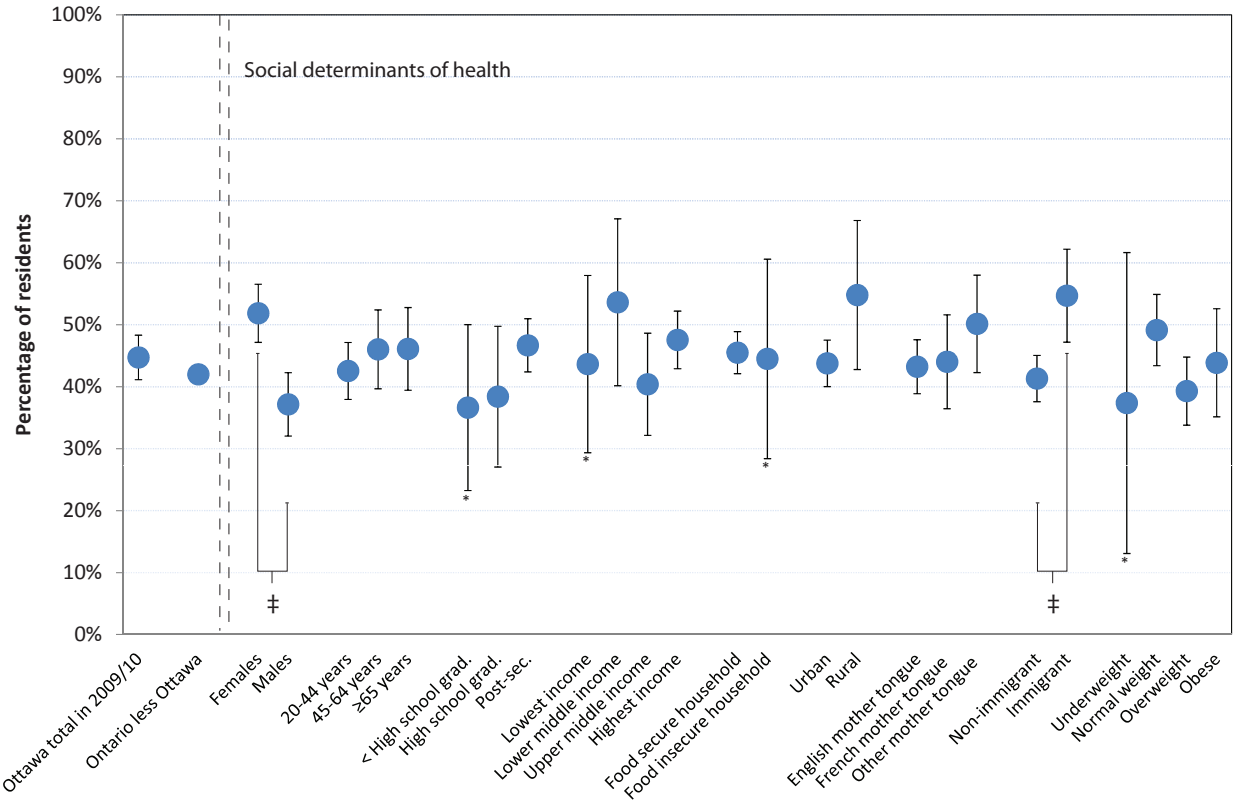
Table 8. Vegetable and fruit consumption among adults (≥20 years) by social determinants of health, Ottawa, 2003 – 2009/10.

	Vegetable and fruit consumption in adults in 2009/10 (aged ≥20 years)	Historical patterns in vegetable and fruit consumption in adults (2003 to 2009/10)
Total sample	In 2009/10, 44.7% (41.1%, 48.3%) or approximately 290,100 Ottawa adults reported consuming ≥5 vegetables and fruits on a daily basis. Approximately 358,600 adults (55.3%, (51.7%, 58.9%)) reported consuming <5 vegetables and fruits on a daily basis.	Similar vegetable and fruit consumption patterns were seen between 2003 and 2007/08.
Rest of Ontario	Ottawa adults were not different from the rest of the province, where 42.0% (41.0%, 43.0%) of adults reported consuming ≥5 vegetables and fruits daily.	There were no differences between Ottawa adults and the rest of the province in 2003 and 2005. However, in 2007/08 Ottawa adults were more likely to consume ≥5 vegetables and fruits daily (46.3% (42.9%, 49.7%)) than adults in the rest of the province (40.6% (39.7%, 41.5%)).
Social Determinants of Health (for Ottawa sample)		
Sex	Fewer adult males reported consuming ≥5 vegetables and fruits (37.2% (32.0%, 42.3%)) compared to adult females (51.9% (47.2%, 56.6%)).	A similar pattern in vegetable and fruit consumption by sex was seen between 2003 and 2007/08.
Age	There was no apparent pattern in vegetable and fruit consumption by age: 43.4% (38.9%, 47.9%) of adults 20-44 years, 46.0% (39.7%, 52.4%) of those 45-64 years, and 46.1% (39.4%, 52.8%) of seniors consumed ≥5 vegetables and fruits daily.	Similarly, no apparent pattern in vegetable and fruit consumption by age was seen between 2003 and 2007/08.
Education	A higher proportion of adults with post-secondary education reported consuming ≥5 vegetables and fruits (46.7% (42.4%, 51.0%)) compared to those with less education (less than high school: 36.6% (23.3%, 50.0%); high school graduation: 38.4% (27.1%, 49.8%)). Although these differences are not statistically significant, they are indicative of a trend.	Between 2003 and 2007/08, adults with post-secondary education were typically more likely than those with less than high school or high school graduation to consume ≥5 vegetables and fruits daily.

	Vegetable and fruit consumption in adults in 2009/10 (aged ≥20 years)	Historical patterns in vegetable and fruit consumption in adults (2003 to 2009/10)
Household income	There was no apparent pattern in vegetable and fruit consumption by household income.	No apparent patterns in vegetable and fruit consumption were seen by household income between 2003 and 2007/08.
Food security status	There was no apparent pattern in vegetable and fruit consumption by food security status with 44.5%* (28.3%, 60.6%) of residents in food insecure households reporting consuming ≥5 vegetables and fruits daily compared to 45.3% (41.6%, 48.9%) of adult residents in food secure households.	In 2007/08, adults of food insecure households were less likely to consume ≥5 vegetables and fruits (28.3%*(18.1%, 38.5%)) compared to adults living in food secure households (47.7% (44.1%, 51.2%)).
Urban/Rural	There were no differences in levels of vegetable and fruit consumption between adults living in urban and rural areas of Ottawa.	There were no differences in vegetable and fruit consumption in urban and rural areas of Ottawa between 2003 and 2007/08.
Mother tongue language	There were no differences in levels of vegetable and fruit consumption by mother tongue language.	There were no differences in vegetable and fruit consumption by mother tongue language between 2003 and 2007/08.
Immigration	Immigrants were more likely to consume ≥5 vegetables and fruits daily (54.7% (47.1%, 62.2%)) compared to Ottawa adult non-immigrants (41.3% (37.6%, 45.1%)).	This difference was not seen between 2003 and 2007/08.
Body mass index	There is no apparent pattern in vegetable and fruit consumption by BMI category: 37.4%* (13.1%, 61.7%) of underweight adults, 49.1% (43.4%, 54.9%) of normal weight adults, 39.3% (33.8%, 44.8%) of overweight adults, and 43.9% (35.3%, 52.6%) of obese adults consumed ≥5 vegetables and fruits daily.	Similarly, no apparent pattern in vegetable and fruit consumption was seen by BMI category between 2003 and 2007/08.

*=Interpret with caution due to high sampling variability. BMI – body mass index.

Figure 7. Percentage of adults (≥20 years) who consumed at least five vegetables and fruits daily by social determinants of health, Ottawa, 2009/10.



Data source: Canadian Community Health Survey (2007/08, 2009/20). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Post-sec – post-secondary.

Importance of Nutritious Foods When Eating Out

As the popularity of eating out increases among Canadians[44], the value placed on nutritious food choices when eating out is more critical in the fight against obesity. The RRFSS measures the priority given to nutrition when choosing meals/snacks not prepared in the home.

In 2010, most adults (aged ≥18 years) considered nutritious food important when eating meals/snacks away from home or ready-to-eat processed foods (95.2%, (94.5%, 96.4%)). Females were more likely than males to report nutritious food as important (97% (95.7%, 98.3%) vs. 93% (90.9%, 95.1%)). Adults living in Ottawa who self-reported as either overweight or obese (93.6% (91.0%, 96.2%) and 90.5% (85.9%, 95.1%)) were less likely to report nutrition as being important than those who self-reported as normal weight (98.1% (96.9%, 99.3%)). Similar patterns were observed in 2005 and 2008; however, among adults who self-reported as normal weight, the importance of choosing nutritious food increased significantly from 92.8% (90.5%, 95.1%) in 2005 to 98.1% (96.9%, 99.3%) in 2010.

Meals and Snacks Outside of the Home

Healthy eating practices are an important component of healthy living and obesity prevention.[45] Increased consumption of meals and snacks away from home, as well as increased consumption of fast food and processed foods exposes individuals to low-quality foods that are often energy dense and have been linked to an increased risk for overweight/obesity.[46, 47] The nutrition module of the RRFSS measures how often in the week prior to being asked, adults living in Ottawa choose to eat restaurant food, fast food and ready-to-eat food. These types of foods may not be as nutritious as meals and snacks prepared at home.

The following is an overall measure that describes how often adults (aged ≥18 years) living in Ottawa ate restaurant food, fast food, or ready-to-eat processed foods in the past week using RRFSS data. Results are presented as the proportion of adults who reported **not** eating meals and snacks outside of the home in the past week. For those adults that did report eating meals and snacks away from home in the past week, results are presented as the average weekly number of times they did eat meals and snacks away from home. For a more detailed look at these indicators separately, refer to the subsequent sections.

HIGHLIGHTS

- One in four (24%) Ottawa adults (aged ≥18 years) reported **not** eating restaurant food, fast food or ready-to-eat foods in the past week.
- Among those that reported eating meals and snacks away from home in the past week, they did so an average of 2.8 times per week.
- Females, older adults, those who did not graduate high school, and those living in lower income households were the most likely groups to report **not** eating meals and snacks away from home in the past week.
- No significant differences were observed for **not** eating meals and snacks outside of the home by mother tongue language or BMI category.

Table 9. Eating restaurant, fast food or ready-to-eat foods in the past week among adults (≥18 years) by social determinants of health, Ottawa, 2005 – 2010

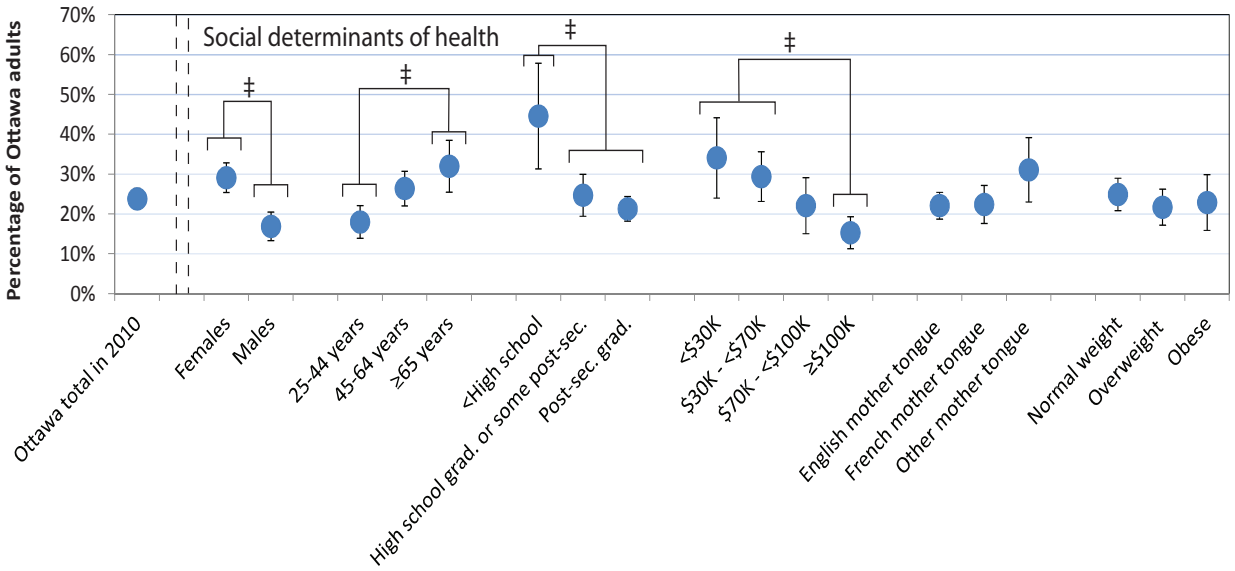
	Eating restaurant, fast food or ready-to-eat foods in the past week in 2010 (aged ≥18 years)	Historical patterns in eating restaurant, fast food or ready-to-eat foods in the past week (2005, 2008)
Ottawa total	Overall 23.8% (21.1%, 26.4%) of Ottawa adults reported that they did **not** eat restaurant food, fast food or ready-to-eat processed foods in the past week. Among those who reported eating meals and snacks in the past week, they reported doing so an average of 2.8 (2.7, 3.0) times.	Similar patterns of eating meals and snacks away from home were observed in 2005 and 2008.
Social Determinants of Health		
Sex	Females (29.1% (25.4%, 32.9%)) were more likely than males (16.9% (13.3%, 20.5%)) to report **not** eating meals and snacks away from home in the past week. Among those that reported eating meals and snacks away from home in the past week, males reported greater frequency than females (3.2 times/week (3.0, 3.5) vs. 2.4 times/week (2.3, 2.6)).	Similar patterns of eating meals and snacks away from home were observed by sex in 2005 and 2008.
Age	The proportion of adults **not** eating meals and snacks away from home in the past week increases with age: 18.0% (13.9, 22.1%) of adults aged 25-44 years, 26.4% (22.1%, 30.8%) of adults aged 45-64 years, and 32.0% (25.6%, 38.5%) of seniors reported **not** eating meals and snacks away from home. Note 18-24 years is not reportable. Among those that reported eating meals and snacks away from home in the past week, there were no differences in average frequency of consumption by age.	Similar patterns of eating meals and snacks away from home were observed by age in 2005 and 2008.

	Eating restaurant, fast food or ready-to-eat foods in the past week in 2010 (aged ≥18 years)	Historical patterns in eating restaurant, fast food or ready-to-eat foods in the past week (2005, 2008)
Education	Adults with less than a high school education (44.6% (31.3%, 57.8%)) were more likely to report **not** eating restaurant food, fast food, or ready-to-eat food in the past week than those who graduated high school or have some post-secondary education (24.7% (19.4%, 30.0%)) or post-secondary graduates (21.3% (18.2%, 24.4%)). Among those that reported eating meals and snacks away from home in the past week, there were no differences in average frequency of consumption by education.	Similar patterns of eating meals and snacks away from home were observed by education in 2005 and 2008.
Household income	Adults with household incomes of <$30K (34.1% (24.0%, 44.2%)) and $30K to <$70K (29.4% (23.1%, 35.6%)) were more likely than those with household incomes ≥$100K (15.3% (11.2%, 19.3%)) to report **not** eating restaurant food, fast food or ready-to-eat foods in the past week. Among those that reported eating meals and snacks away from home in the past week, there were no differences in average frequency of food consumption by household income.	Similar patterns of eating meals and snacks away from home were observed by income in 2005 and 2008.
Mother tongue language	There were no differences in the proportion of adults who reported **not** eating meals and snacks away from home in the past week by mother tongue language. Among those who reported eating meals and snacks away from home in the week prior to being asked, adults whose mother tongue language was French reported a higher average weekly frequency of consumption than those whose mother tongue language was neither English nor French (3.0 times/week (2.7, 3.3) vs. 2.4 times/week (2.0, 2.8)).	There were no differences in the proportion of adults who reported **not** eating meals and snacks away from home in the past week by mother tongue language in 2005 and 2008. There were no differences in average weekly consumption of meals and snacks away from home by mother tongue in 2005 and 2008.

	Eating restaurant, fast food or ready-to-eat foods in the past week in 2010 (aged ≥18 years)	Historical patterns in eating restaurant, fast food or ready-to-eat foods in the past week (2005, 2008)
Body mass index*¥	There were no differences in the weekly frequency of eating meals and snacks away from home by BMI category.	Similarly, there were no differences in weekly consumption of meals and snacks away from home by BMI category in 2005 or 2008.

***= Interpret with caution due to high sampling variability; ¥= underweight BMI category was excluded from average consumption analyses due to small sample size. BMI – body mass index, K – thousand.**

Figure 8. Percentage of adults (≥18 years) who did not eat in a restaurant, eat fast food or pick up ready-to-eat foods from grocery stores in the past week by social determinants of health, Ottawa, 2010.



Data source: Rapid Risk Factor Surveillance System (RRFSS) 2010
*= Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, K – thousand, Post-sec. – post-secondary.

Eating Out at Restaurants

Frequently eating out at restaurants may have a negative impact on a person's diet quality and health.[47] Studies have shown that individuals who frequently eat out at restaurants consume foods higher in fat and calories, while eating fewer vegetables, fruits and fibre.[47] This combination can contribute to weight gain.[47] In 2005, 2008 and 2010, the RRFSS asked adults (aged ≥18 years) living in Ottawa how often in the past week did they eat in a restaurant (not including fast food or drive-through places). Results are presented as the proportion of adults who reported **not** eating restaurant food in the past week. Among those that did report eating restaurant food in the past week, the average weekly number of times eating restaurant food are shown.

HIGHLIGHTS

- Less than half (44%) of Ottawa adults (aged ≥18 years) reported **not** eating out in a restaurant in the past week.
- Ottawa adults who ate out at a restaurant in the past week did so an average of 1.8 times per week.
- Females, adults with less than high school graduation, those in lower income households, and those who spoke neither English nor French were more likely to report **not** eating out at restaurants.
- Males were more likely than females to report eating restaurant food more often.
- There was some indication that **not** eating out in a restaurant increases with age; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences were observed for **not** eating out at restaurants by BMI category.

Table 10. Eating in a restaurant in the past week among adults (≥18 years) by social determinants of health, Ottawa, 2005 – 2010

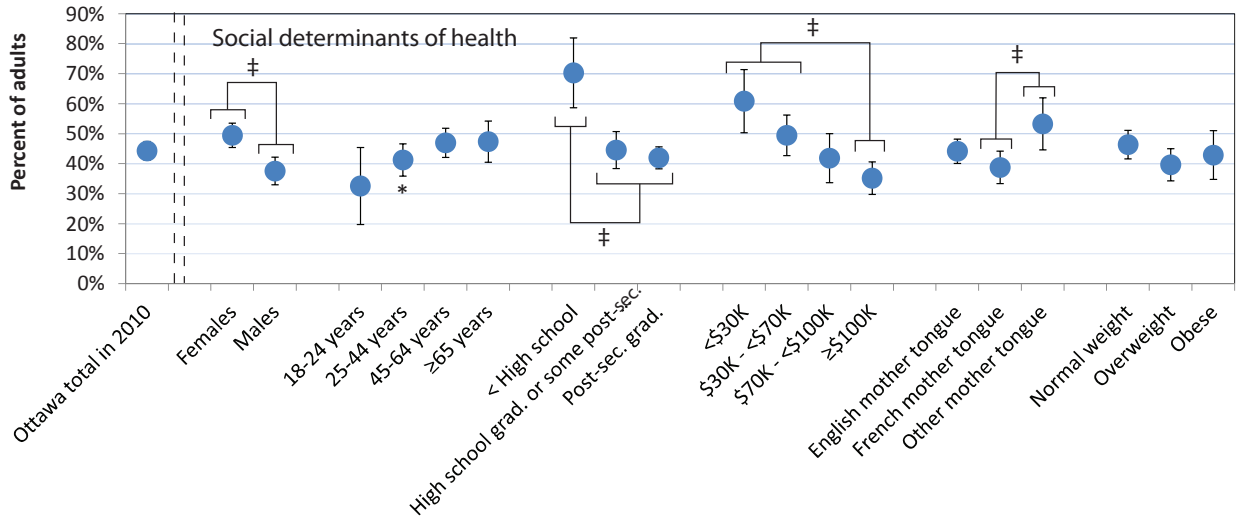
	Eating in a restaurant (not including fast food) in 2010 (aged ≥18 years)	Historical patterns in eating out in a restaurant (2005, 2008)
Ottawa total	Less than half (44.3% (41.2%, 47.4%)) of Ottawa adults reported **not** eating in a restaurant in the past week. Of those that reported eating out at a restaurant in the past week, they reported doing so an average of 1.8 (1.7, 2.0) times.	Similar patterns in eating out in restaurants were observed in 2005 and 2008.
Social Determinants of Health		
Sex	More females (49.5% (45.8%, 53.2%)) than males (37.6% (33.6%, 41.6%)) reported **not** eating in a restaurant in the past week. Of those who reported eating out at a restaurant in the past week, males were more likely to report a higher average frequency of weekly consumption than females (2.0 times/week (1.8, 2.3) vs. 1.6 times/week (1.5, 1.7)).	Similar patterns in eating out in restaurants by sex were observed in 2005 and 2008.
Age	There is some indication that **not** eating out in a restaurant in the past week increases slightly with increasing age; however, these differences were not statistically significant. 32.6% (19.7%, 45.4%) of adults 18-24 years, 41.3% (36.0%, 46.6%) of adults 25-44 years, 47.0% (42.1%, 51.9%) of adults 45-64 years, and 47.4% (40.5%, 54.2%) of seniors reported **not** eating out in a restaurant in the past week. Among those that reported eating restaurant food in the past week, there were no differences in average frequency of weekly restaurant food consumption by age.	In 2008, a similar pattern occurred, where young adults were less likely than older adults to report **not** eating out in a restaurant in the past week. However, in 2005, there were no differences in eating out at restaurants by age. Among those that reported eating restaurant food in the week prior to being asked, no differences were observed in average frequency of weekly consumption by age in 2005 and 2008.

	Eating in a restaurant (not including fast food) in 2010 (aged ≥18 years)	Historical patterns in eating out in a restaurant (2005, 2008)
Education	Adults with less than a high school education (70.3% (58.7%, 81.9%)) were more likely to report **not** eating at a restaurant in the past week than adults who completed high school or some post-secondary education (44.6% (38.3%, 50.8%)) and post-secondary graduates (42.0% (38.3%, 45.7%)). Among those that reported eating restaurant food in the past week, there were no differences observed in average frequency of weekly restaurant food consumption by education.	Similar patterns in eating out in restaurants by education level were observed in 2005 and 2008.
Household income	There is some indication that **not** eating out in a restaurant in the past week decreases with increasing income. 60.9% (50.3%, 71.4%) of adults with a household income of <$30K, 49.5% (42.6%, 56.3%) of those with a household income of $30K to <$70K, 41.9% (33.7%, 50.1%) of those with an income of $70K to <$100K, and 35.2% (29.8%, 40.6%) of those with a household income of ≥$100K reported **not** eating out in a restaurant in the past week. Among those that reported eating restaurant food in the past week, there were no differences in average frequency of weekly consumption by household income.	Similar patterns in eating out in restaurants by household income were observed in 2005 and 2008.

	Eating in a restaurant (not including fast food) in 2010 (aged ≥18 years)	Historical patterns in eating out in a restaurant (2005, 2008)
Mother tongue language	Adults whose mother tongue was neither English nor French (53.3% (44.6%, 61.9%)) were more likely to report **not** eating out in a restaurant in the past week than those whose mother tongue was French (38.8% (33.4%, 44.3%)). Among those that reported eating restaurant food in the past week, there were no differences in average frequency of weekly consumption by mother tongue language.	In 2005 and 2008, there were no differences in the weekly frequency of eating out at a restaurant by mother tongue.
Body mass index¥	There were no differences in the weekly frequency of eating out at restaurants by BMI category.	There were no differences in the weekly frequency of eating out at restaurants by BMI category in 2005 and 2008.

***= Interpret with caution due to high sampling variability; ¥= underweight BMI category was excluded from average consumption analyses due to small sample size. BMI – body mass index, K – thousand.**

Figure 9. Percentage of adults (≥18 years) who did not eat at a restaurant in the past week by social determinants of health, Ottawa, 2010.



Data source: Rapid Risk Factor Surveillance System (RRFSS) 2010
*= Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, K – thousand, Post-sec. – post-secondary.

Fast Food Consumption

Frequent fast food consumption is associated with an increased prevalence of overweight and obesity.[47] In addition to large portion sizes, food choices available from major fast food chains are typically energy dense due to high fat content.[48] Many studies worldwide have shown an association between frequent fast food consumption and an increased risk for weight gain and several chronic diseases. In 2005, 2008 and 2010, the RRFSS asked adults (aged ≥18 years) living in Ottawa how often in the past week they ate fast food such as Chinese food, pizza, fried chicken or hamburgers, and French fries. Results are presented as the proportion of adults who reported **not** eating fast food in the past week. Among those who reported eating fast food in the past week, the average weekly number of times fast food was eaten is shown.

HIGHLIGHTS

- Just over half (54%) of Ottawa adults (aged ≥18 years) reported **not** eating fast food in the past week.
- Ottawa adults who reported eating fast food in the past week did so an average of 1.5 times. There has been no change in the average number of times per week fast food was eaten since 2005.
- Females and older adults were most likely to report **not** eating fast food in the past week.
- There was some indication that those whose mother tongue language was neither English nor French were more likely to **not** eat fast food; however, additional data are needed to confirm whether this difference truly exists.
- No significant differences were observed for **not** eating fast food by education, household income or BMI category.

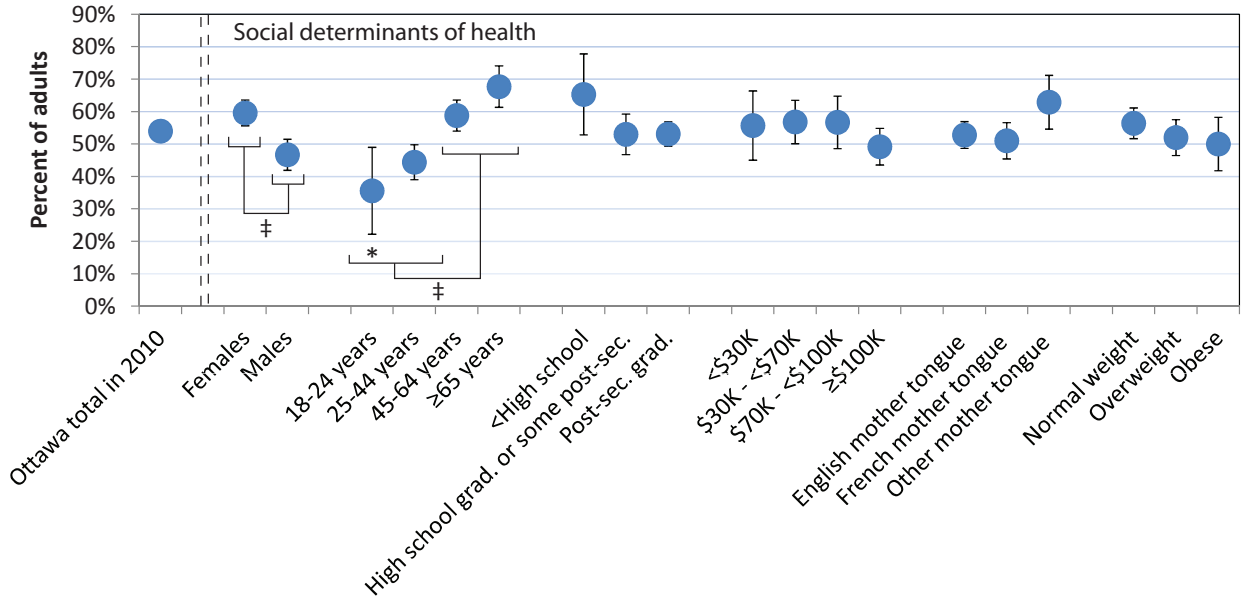
Table 11. Eating fast food in the past week among adults (≥18 years) by social determinants of health, Ottawa, 2005 – 2010.

	Fast food consumption in 2010 (aged ≥18 years)	Historical patterns in fast food consumption (2005, 2008)
Ottawa total	Overall 54.0% (50.9%, 57.1%) of Ottawa adults reported **not** eating fast food in the past week. Among those who reported eating fast food in the past week, Ottawa adults did so an average of 1.5 times/week (1.4, 1.6).	Similar patterns in the weekly frequency of fast food consumption were observed in 2005 and 2008.
Social Determinants of Health		
Sex	More females than males reported **not** eating fast food in the previous week (59.6% (55.7%, 63.6%) vs. 46.7% (41.9%, 51.5%)). Of those that reported eating fast food in the past week, males reported eating it an average of 1.7 times/week (1.5, 1.8) compared to an average of 1.4 times/week (1.3, 1.5) for females.	Similar patterns in the weekly frequency of fast food consumption by sex were observed in 2005 and 2008. Among those who reported eating fast food in the past week, males reported a higher average frequency of consumption than females in 2005 and 2008.
Age	The proportion of adults **not** eating fast food in the past week increased with age. 35.6%* (22.2%, 49.0%) of adults 18-24 years, 44.4% (39.0%, 49.8%) of adults 25-44 years, 58.9% (54.0%, 63.6%) of adults 45-64 years, and 67.7% (51.0%, 77.8%) of seniors reported **not** eating fast food in the past week. Among those that reported eating fast food in the past week, adults aged 25-44 years (1.6* times/week (1.5, 1.8)) reported a higher average consumption than seniors (1.3 times/week (1.0, 1.5)).	A similar increase by age in the proportion of those **not** consuming fast food was observed in 2005 and 2008. However, there were no differences by age in the weekly frequency of consumption of fast food.
Education	There were no differences in the weekly frequency of fast food consumption by education.	There were no differences in the weekly frequency of fast food consumption by education in 2005 and 2008.

	Fast food consumption in 2010 (aged ≥18 years)	Historical patterns in fast food consumption (2005, 2008)
Household income	There were no differences in the weekly frequency of fast food consumption by household income.	There were no differences in the frequency of weekly fast food consumption by household income in 2005 and 2008.
Mother tongue language	There was some indication that adults whose mother tongue is neither English nor French (62.9% (54.6%, 71.2%)) were more likely to report **not** eating fast food in the past week than those whose mother tongue was English (52.8% (48.7%, 56.9%)) or French (51.0% (45.4%, 56.6%)); however, these differences are not statistically significant. Among those that reported eating fast food in the past week, there were no differences in the average weekly frequency of consumption by mother tongue language.	There were no differences in the frequency of weekly fast food consumption by mother tongue language in 2005 and 2008.
Body mass index¥	There were no differences in fast food consumption behaviour by BMI category. Of those who reported eating fast food in the past week, there were no differences in average consumption by BMI category.	In 2005 and 2008, normal weight adults were more likely than overweight adults to abstain from eating fast food on a weekly basis and there was some indication that normal weight adults were also more likely to abstain from fast food compared to those who were obese. There were no differences in average frequency of weekly consumption of fast food by BMI category in 2005 and 2008.

***= Interpret with caution due to high sampling variability; ¥= underweight BMI category was excluded from average consumption analyses due to too small sample size. BMI – body mass index.**

Figure 10. Percentage of adults (≥18 years) who did not eat fast food in the past week by social determinants of health, Ottawa, 2010.



Data source: Rapid Risk Factor Surveillance System (RRFSS) 2010
*= Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, K – thousand, Post-sec. – post-secondary.

Ready-to-Eat Packaged Food Consumption

The consumption of processed foods and pre-prepared meals has increased over the past few decades in several countries.[49] Processed foods are often lower quality-foods that contain high levels of fat, sodium and sugar. Frequent consumption of these types of food may increase a person's risk for weight gain and becoming overweight or obese.[46] In 2005, 2008 and 2010 the RRFSS asked adults (aged ≥18 years) who live in Ottawa how often in the past week do they pick up ready-to-eat processed foods from the grocery store or supermarket. Results are presented as the proportion of adults who reported **not** eating ready-to-eat foods in the past week. Among those who reported eating ready-to-eat food in the past week, the average weekly number of times ready-to-eat foods were eaten shown.

HIGHLIGHTS

- 71% of Ottawa adults (aged ≥18 years) reported **not** picking up ready-to-eat foods from the grocery store in the past week.
- On average, Ottawa adults who reported eating read-to-eat foods did so an average of 1.5 times in the past week.
- Males were more likely than females to report eating ready-to-eat foods more often.
- Ottawa seniors were the least likely to report picking up ready-to-eat foods from the grocery store in the past week.
- No significant differences in the consumption of ready-to-eat foods were observed by household income, mother tongue language or BMI category.

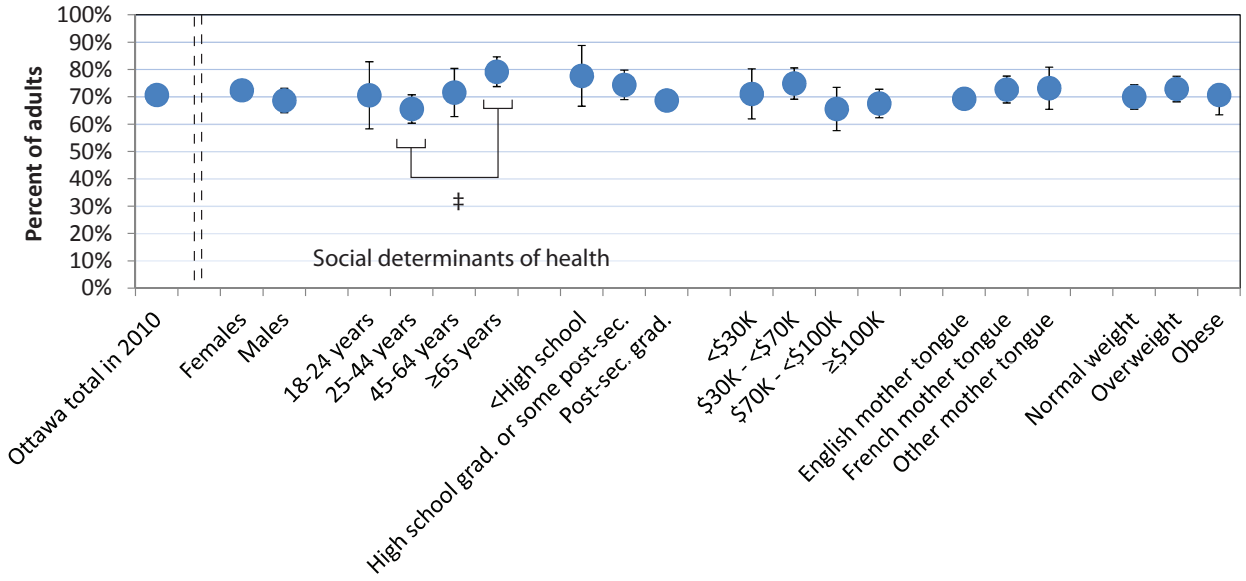
Table 12. Eating ready-to-eat packaged foods in the past week among adults (≥18 years) by social determinants of health, Ottawa, 2005 – 2010

	Eating ready-to-eat packaged foods in 2010 (aged ≥18 years)	Historical patterns in eating ready-to-eat packaged foods (2005, 2008)
Ottawa total	Overall 70.7% (67.9%, 73.6%) of Ottawa adults reported **not** picking up ready-to-eat foods from the grocery store in the past week. Among those who reported eating ready-to-eat foods in the past week, Ottawa adults did so an average of 1.5 times (1.4, 1.6).	Similar patterns in the frequency of ready-to-eat food consumption were observed in 2005 and 2008.
Social Determinants of Health		
Sex	Among those who reported picking up ready-to-eat foods from the grocery store in the past week, males reported a higher average frequency than females (1.7 times/week (1.5, 1.9) vs. 1.3 times/week (1.2, 1.4)).	Among those who reported picking up ready-to-eat foods in the past week, males reported a higher average frequency of consumption than females in 2005 and 2008.
Age	There is some indication that seniors were the least likely to report picking up ready to eat foods in the past week. 79.2% (73.8%, 84.7%) of seniors report **not** eating ready-to-eat food from the grocery store in the past week (18-24 years: 70.6% (58.3%, 19.6%), 25-44 years: 65.6% (60.4%, 70.8%), 45-64 years: 71.6% (62.8, 80.4%)). Among those who reported picking up ready-to-eat foods in the past week, there were no differences in average weekly consumption by age.	Similar patterns in the weekly frequency of ready-to-eat food consumption by age were observed in 2005 and 2008.

	Eating ready-to-eat packaged foods in 2010 (aged ≥18 years)	Historical patterns in eating ready-to-eat packaged foods (2005, 2008)
Education	No differences in the frequency of ready-to-eat food consumption were observed by education level.	There were no differences in the frequency of ready-to-eat food consumption by education in 2008. In 2005, adults with less than a high school education (83.9% (76.2%, 91.7%)) were more likely **not** to eat ready-to-eat food than post-secondary graduates (69.0% (65.3%, 72.7%)). Among those who reported picking up ready-to-eat foods in the past week, there were no differences in weekly average consumption of ready-to-eat food by education in 2005 and 2008.
Household income	No differences in the frequency of ready-to-eat food consumption were observed by household income.	There were no differences in the frequency of ready-to-eat food consumption by household income in 2005 and 2008.
Mother tongue language	No differences in the frequency of ready-to-eat food consumption were observed by mother tongue.	There were no differences in the frequency of ready-to-eat food consumption by mother tongue language in 2005 and 2008.
Body mass index¥	No differences in the frequency of ready-to-eat food consumption were observed by BMI category.	There were no differences in the frequency of ready-to-eat food consumption by BMI category in 2005 and 2008.

Data note: BMI category was excluded from average consumption analyses due to too small sample size.
*= Interpret with caution due to high sampling variability;¥= underweight BMI category was excluded from average consumption analyses.
BMI – body mass index.

Figure 11. Percentage of adults (≥18 years) who did not eat ready-to-eat foods from a grocery store in the past week by social determinants of health, Ottawa, 2010.



Data source: Rapid Risk Factor Surveillance System (RRFSS) 2010
*= Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, K – thousand, Post-sec. – post-secondary

Cost of a Nutritious Food Basket in Ottawa

In May 2011, the cost of a nutritious food basket was priced for Ottawa according to the protocol in the *Nutritious Food Basket Guidance Document* (2010) from the Ontario Public Health Standards.

The Nutritious Food Basket is a survey tool that is a measure of the cost of basic healthy eating for males and females of different age groups. The Nutritious Food Basket is calculated from the costing of foods that are reflective of Canadian eating patterns and buying habits. It also represents current nutrition recommendations from *Eating Well with Canada's Food Guide*. Food staples such as flour, spreads and oils are included, as well as costs for spices, seasonings and beverages. The basket does not include other necessities such as cleaning supplies, toothpaste or shampoo. The Nutritious Food Basket is an underestimation of the needs of people who require a special medical diet. Their food costs and nutritional needs are higher than the rest of the population. The cost of feeding babies less than one year of age is not included in the Nutritious Food Basket and would be an additional food cost for households. The costs for meals purchased away from home would also need to be added to the basic food basket cost for households.

The Nutritious Food Basket uses the following reference for a family of four:

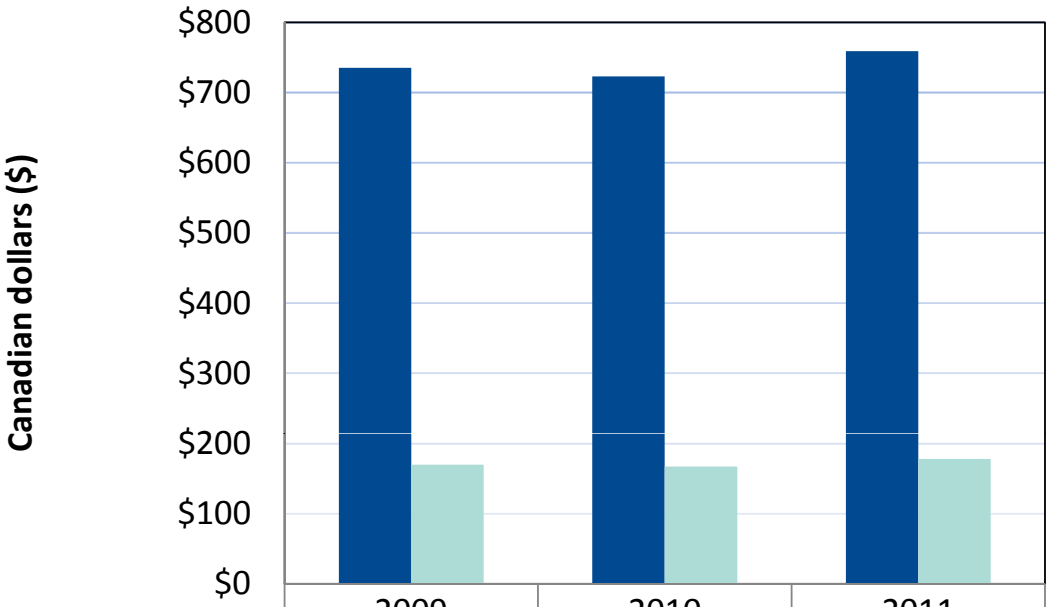
31-50 year old man
31-50 year old woman
14-18 year old boy
4-8 year old girl

In Ottawa in 2011, the Nutritious Food Basket for this family would cost: **$759 per month**. This equates to $175.39 per week and is lower than the Ontario average of $177.83.

For further information on the Nutritious Food Basket and the price of eating well in Ottawa please refer to specific topic factsheets available at:

http://ottawa.ca/doc_repository/reports/nutritious_food_basket_2011_en.pdf
http://www.ottawa.ca/doc_repository/reports/price_eating_well_2011_en.pdf

Figure 12. Cost of a nutritious food basket in Ottawa, 2009 to 2011.



	2009	2010	2011
Cost per month	$735	$723	$759
Cost per week	$169.62	$167.16	$177.83

Food Security

Food security exists "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life".[50]

Household food insecurity is "the inability to acquire or consume an adequate diet quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so".[51]

The CCHS uses a comprehensive and validated survey tool (the *Household Food Security Survey Module*) to assess the food security status of households. The tool is based on a set of 18 questions and indicates whether households with and without children were able to afford the food they needed in the previous 12 months. It captures three thresholds adopted by Health Canada:

Food secure: One or no indication of difficulty with income-related food access.
Moderately food insecure: Indication of compromise in quality and/or quantity of food consumed.
Severely food insecure: Indication of reduced food intake and disrupted eating patterns (hunger).

HIGHLIGHTS

- Approximately 50,400 residents (aged ≥12 years) in Ottawa (7%) indicated some level of food insecurity. Nearly 17,000 residents were severely food insecure, indicating reductions in food intake and disrupted eating patterns.
- Household income was associated with food security, with 41% of residents in the lowest income households and 29% of residents in lower middle income having reported some level of food insecurity.
- There was some indication that urban residents, those who had not graduated from high school and those whose mother tongue was neither English nor French reported lower levels of food security; however, additional data are needed to confirm whether this difference truly exists.
- Immigrants reported lower levels of food security than non-immigrants.

Table 13. Food security status among residents (≥12 years) by social determinants of health, Ottawa, 2007/08 – 2009/10.

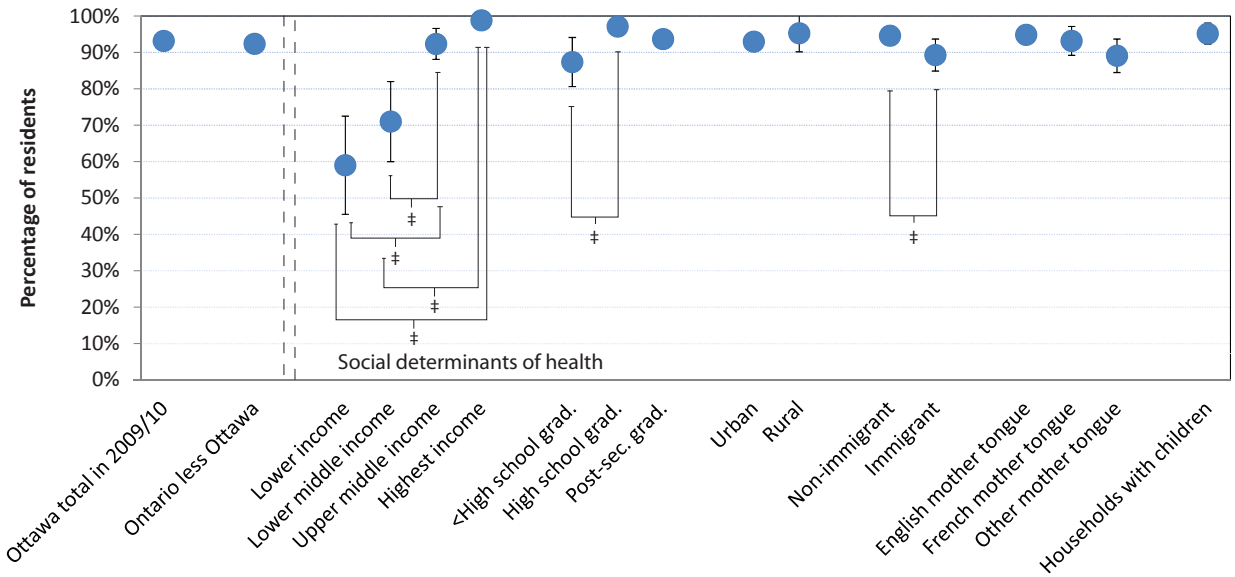
	Food security status in 2009/10 (aged ≥12 years)	Historical patterns in food security status (2007/08 vs. 2009/10)
Ottawa sample	6.8% (4.9%, 8.8%) or approximately 50,400 residents in Ottawa indicated some level of food insecurity. 4.5%* (2.9%, 6.1%) or approximately 33,400 residents were moderately food insecure and 2.3%* (1.1%, 3.5%) or approximately 16,900 residents were severely food insecure.	In 2007/08, 7.4% (5.7%, 9.1%) or approximately 51,400 residents in Ottawa indicated some level of food insecurity. The difference between the prevalence of food insecure individuals in Ottawa between 2007/08 and 2009/10 is not statistically significant.
Rest of Ontario	Ottawa was not different from the rest of the province, where 7.6% (7.1%, 8.1%) of the population reported some level of food security.	Similar patterns in food security levels were observed in 2007/08.
Social Determinants of Health (for Ottawa sample)		
Household income	The proportion of food secure households increases with rising household income. 41.0%* (27.3%, 54.7%) of residents living in the lowest income category and 29.0%* (18.0%, 40.0%) of residents in the lower middle income category indicated some level of food insecurity. The lowest income and lower middle income category capture residents living below the LICO. One third of residents in the lowest and lower middle income categories reported some level of food insecurity.	Similar patterns in food security levels by household income levels were observed in 2007/08.
Education	Residents who had not graduated from high school reported lower levels of food security (87.4% (80.6%, 94.1%)) compared to residents who had graduated high school (97.1% (94.7%, 99.5%)).	This difference was not seen in 2007/08.

	Food security status in 2009/10 (aged ≥12 years)	Historical patterns in food security status (2007/08 vs. 2009/10)
Urban/rural	No differences were observed in food security levels between residents living in urban and rural areas of Ottawa.	In 2007/08, residents of rural areas were more likely to report higher levels of food security than those living in urban areas of Ottawa (98.6% (96.8%, 100.5%) vs. 92.2% (90.4%, 93.9%)).
Immigration	Immigrants (89.3% (84.8%, 93.7%)) reported lower levels of food security than non-immigrants (94.6% (92.8%, 96.5%)).	Similar patterns in food security levels by immigration status were observed in 2007/08.
Mother tongue language	There was some indication of a difference in food security levels by mother tongue language between English and other language; however, these differences were not statistically significant. 94.9% (92.8%, 96.9%) of Ottawa residents with English mother tongue language reported that they were food secure, 5.1%* (3.1%, 7.2%) reported some level of food insecurity. 93.2% (89.2%, 97.1%) of Ottawa residents with French mother tongue language reported that they were food secure, 6.8%* (2.9%, 10.8%) reported some level of food insecurity. 89.1% (84.5%, 93.7%) of Ottawa residents with mother tongue language other than English or French reported that they were food secure, 10.9%* (6.3%, 15.5%) reported some level of food insecurity.	Similar patterns in food security levels by mother tongue language were observed in 2007/08.

	Food security status in 2009/10 (aged ≥12 years)	Historical patterns in food security status (2007/08 vs. 2009/10)
Households with children <18 years	95.2% (92.3%, 98.1%) of Ottawa residents with children <18 years of age in their household reported that they were food secure, 4.8%* (1.9%, 7.7%) reported some level of food insecurity. 78.7% (64.0%, 93.4%) of Ottawa residents with children <18 years of age in their household and who reported income levels below the LICO reported that they were food secure.	Not available for 2007/08.

*=Interpret with caution due to high sampling variability, LICO = Low Income Cut Off.

Figure 13. Percentage of food secure residents (≥12 years) by social determinants of health, Ottawa, 2009/10.



Data source: Canadian Community Health Survey (2009/10). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, K – thousand, Post-sec. – post-secondary.

Food Bank Users

Food bank user data is generated by Food Banks Canada. Food Banks Canada releases an annual Hunger Count Survey that is distributed to provincial and regional food banks including the Ottawa Food Bank. The survey is sent out to member agencies that provide meal and hamper programs across the City. They are asked to provide the number of and client type for the month of March.

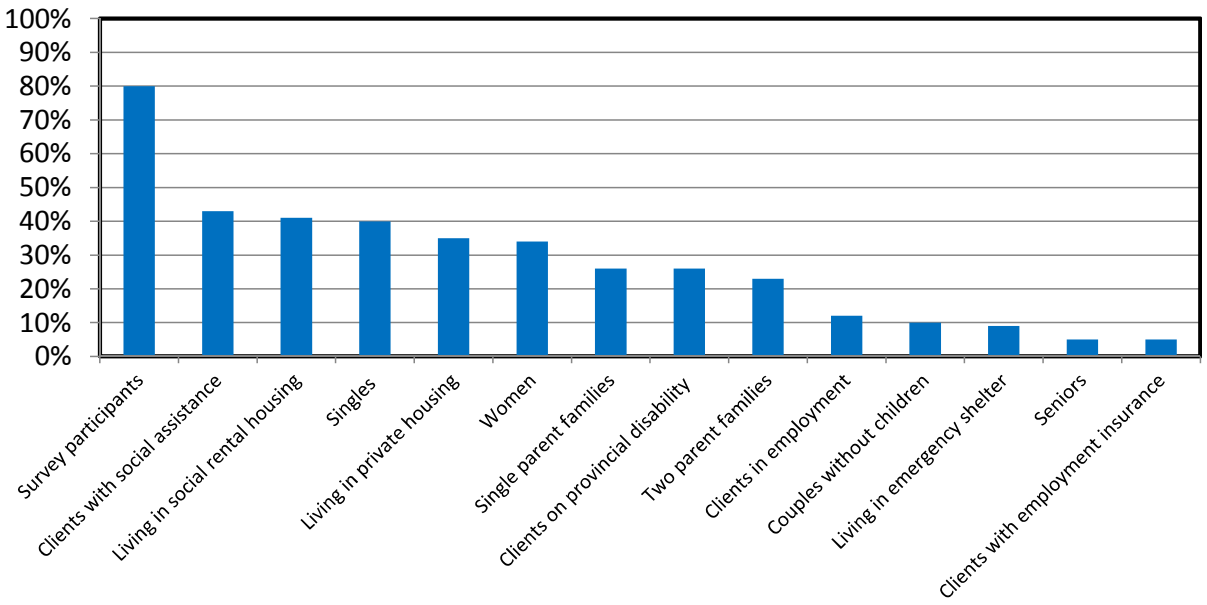
Between 2009 and 2011 the survey had a completion rate of approximately 80%. In **Figure 14**, the bars represent the percentage of total food bank users (clients) who had each particular characteristic considered (women, seniors, etc).

The number of food bank users has steadily climbed between 2009 and 2011 with an annual increase of almost 4% per year. There was an increase of almost 13% in the number of meals served between 2010 and 2011. Between 2009 and 2010 the number of households served increased, but declined by 10% in 2011, with a total of 8,107 households served in 2011.

Between 2010 and 2011, the number of employed individuals using the food bank dropped by 5%. This is in contrast to those on Provincial Disability Support and Employment Insurance which rose by approximately 5% and 1% respectively.

In 2011, 35% of the people using a food bank were living in private rental housing, while 41% lived in social rental housing. These numbers decreased by 6% from 2010 to 2011. This is in contrast to an increase of 6% among those living in an emergency shelter in 2011.

Figure 14. Characteristics of food bank users in Ottawa, 2011



Data source: Hunger Count Survey (2011) created by Food Banks Canada; distributed and compiled by the Ottawa Food Bank.

Food Environment in Ottawa

The food environment is defined by food retail outlets, which include grocery, convenience and specialty food stores, as well as fast food and full service restaurants. Food retail outlets were defined using the North American Industry Classification System – Canada (NAICS) (see glossary).

Grocery stores include both supermarkets and grocery stores with a general line of foods and a full line of fruits, vegetables and fresh meats.

Specialty stores concentrate on specialised food types such as meat stores, seafood stores, fruit and vegetable stores, bakeries, candy and nut stores, dairy stores, bulk food stores, organic food stores, health food stores, and ethnic food stores.

Convenience stores have a limited line of convenience products (e.g., milk, snack food, dried/canned food) and include gas bars with a convenience store.

Fast food outlets provide limited service including ordering at a counter and payment for food before being delivered and includes mall "food courts", pizzerias, and donut and coffee shops. Outlets found in cinemas and temporary in nature (*i.e.*, chip wagons and hot dog stands) are excluded from this definition.

Restaurants provide full service, including table ordering from a waiter/waitress and paying for the meal at its completion. Hotel restaurants, buffets and bars that serve food, "mom and pop" establishments (provided they are a licensed registered business) are included, while cafeterias, catering companies, and country/private clubs are excluded.

Food environment information was provided by the ONS (www.neighbourhoodstudy.ca) and was collected in 2006. In **Table 14**, City of Ottawa neighbourhoods have been grouped according to their socio-economic status (SES) quintile. Within each SES quintile, each food resource was ranked primarily using the resource density per 1,000 people in the neighbourhood followed by total number of raw counts of the resource within the neighbourhood. Density of resources was used as the predominant measure because it best represents the demand on the resources relative to the number of residents in the neighbourhood rather than the raw counts. Density is a good measure in urban neighbourhoods (as are the majority in Ottawa), but has the potential to miss-rank rural neighbourhoods. Where there are fewer residents per land area and greater distances between households and resources, such as in rural areas, density becomes a less important measure.

The top three neighbourhoods in the City of Ottawa for density of food resources are listed below (2006):

Grocery stores:

1) Orleans Central with 0.9 per 1,000 (3 stores),
2) Overbrooke-McArthur with 0.5 per 1,000 (6 stores), and
3) East-Industrial and Crestview-Meadowlands, each tied with 0.5 stores per 1,000 (4 stores each).

Specialty food stores:

1) Byward Market with 6.0 per 1,000 (27 stores),
2) Orleans Central with 2.0 per 1,000 (7 stores), and
3) Island Park with 1.4 per 1,000 (7 stores).

Convenience stores:

1) Hintonburg-Mechanicsville with 2.0 per 1,000 (19 stores),
2) Orleans Central with 1.4 per 1,000 (5 stores), and
3) Overbrook-McArthur with 1.3 per 1,000 (15 stores).

Fast food outlets:

1) Byward Market with 1.3 per 1,000 (59 outlets),
2) Orleans Central with 0.9 per 1,000 (31 outlets), and
3) Centretown with 0.6 per 1,000 (148 outlets).

Restaurants:

1) Byward Market with 17.0 per 1,000 (77 restaurants),
2) West Centretown with 4.9 per 1,000 (59 restaurants), and
3) Centretown with 4.7 per 1,000 (113 restaurants).

While the top three neighbourhoods have been provided for each food resource, it is much more difficult to identify the bottom three neighbourhoods due to the high number of neighbourhoods that are either tied with none or who present with a very low quantity of the resources.

The neighbourhood of Playfair Park-Lynda Park-Guildwood Estates had **no** food resources available within neighbourhood boundaries. The neighbourhood of Briargreen-Leslie Park had **one** convenience store, and the neighbourhood of Qualicum-Redwood Park had **one** fast food outlet.

The neighbourhood of Playfair Park-Lynda Park-Guildwood Estates had the highest percentage of residents who consumed five or more servings of fruit and vegetables per day at 72% while the Ledbury-Heron Gate-Ridgemont-Elmwood neighbourhood had the lowest percentage at 20%*.

The neighbourhood of Glen Cairn-Kanata South-Business Park had the highest percentage of residents with a BMI of 25 kg/m^2 or greater at 68% (overweight or obese) while the neighbourhood of Rockcliffe-Manor Park had the lowest percentage of overweight or obese residents at 29%*.

*= Interpret with caution

Table 14. Neighbourhood food environment by socio-economic quintiles in Ottawa, 2006

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Over-weight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/ Veg (≥5 servings/ day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 1 – Most advantaged socio-economically																	
Beaverbrook	6T	0	0.0	9T	0	0.0	12T	1	0.2	11T	1	0.0	12	1	0.2	41.9* ± 17.4	NR
Briar Green – Leslie Park	6T	0	0.0	9T	0	0.0	12T	1	0.2	12T	0	0.0	15T	0	0.0	NR	43.2* ± 20.2
Bridlewood – Emerald Meadows	6T	0	0.0	9T	0	0.0	7T	5	0.3	10	2	0.0	10	3	0.2	50.4 ± 8.8	43.4 ± 9.9
Carp – Hardwood Plains	6T	0	0.0	8T	1	0.1	11	2	0.2	9T	3	0.0	5	5	0.6	54.0 ± 9.8	40.0 ± 11.4
Civic Hospital-Central Park	5T	1	0.1	8T	1	0.1	3T	6	0.6	3	8	0.1	11T	2	0.2	45.8 ± 12.7	45.3 ± 12.2
Glebe – Dows Lake	2	2	0.2	2	8	0.7	3T	7	0.6	2T	12	0.1	2	24	2.2	33.7 ± 10.2	44.4 ± 13.9
Greely	6T	0	0.0	5T	3	0.3	1	9	0.8	8	5	0.0	8T	5	0.4	60.0 ± 11.5	30.7* ± 10.7
Island Park	3T	1	0.2	1	7	1.4	5	2	0.4	6T	3	0.1	1	12	2.3	42.9* ± 15	50.6 ± 11.5
Kanata Lakes – Marchwood Lakeside – Morgan's Grant – Kanata North Business Park	4T	2	0.1	8T	1	0.1	10	4	0.2	1	16	0.1	4	12	0.7	42.7 ± 11.2	55.3 ± 9.7

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Over-weight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/ Veg (≥5 servings/ day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Kars – Osgoode	5T	1	0.1	9T	0	0.0	14	1	0.1	12T	0	0.0	11T	2	0.2	52.6 ± 13	26.2* ± 14.9
Manotick – North Gower	5T	1	0.1	7	2	0.2	2T	6	0.7	4	5	0.1	9	4	0.4	50.0 ± 12.3	41.8 ± 12.3
Merivale Gardens – Grenfell Glen – Pineglen – Country Place	6T	0	0.0	3	1	0.4	6	1	0.4	7	2	0.1	3	4	1.5	NR	61.4 ± 19.8
Metcalfe	3T	1	0.2	9T	0	0.0	12T	1	0.2	5	4	0.1	6	3	0.5	48.1 ± 13.6	34.2* ± 16.2
Munster Hamlet – Richmond	6T	0	0.0	5T	3	0.3	8	3	0.3	9T	3	0.0	8T	5	0.4	56.1 ± 12	48.0 ± 13.2
Navan – Vars	5T	1	0.1	8T	1	0.1	2T	7	0.7	11T	1	0.0	11T	2	0.2	61.2 ± 9.4	37.6* ± 16.2
New Barrhaven – Stonebridge	1	6	0.3	6	5	0.2	13	2	0.1	2T	12	0.1	13	3	0.1	41.0 ± 9.6	27.1* ± 10.7
Orleans Chapel Hill South	6T	0	0.0	9T	0	0.0	12T	1	0.2	6T	3	0.1	15T	0	0.0	52.2 ± 10.3	NR
Riverside South – Leitrim	6T	0	0.0	9T	0	0.0	9	2	0.3	12T	0	0.0	14	1	0.1	36.0* ± 13.3	26.4* ± 13.6
Stittsville	4T	2	0.1	4	4	0.3	7T	5	0.3	2T	12	0.1	7	6	0.4	51.5 ± 9.7	44.6 ± 8.4
Stittsville – Basswood	6T	0	0.0	9T	0	0.0	4	4	0.5	11T	1	0.0	15T	0	0.0	NR	NR

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Over-weight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/ Veg (≥5 servings/ day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 2																	
Barrhaven	5T	1	0.1	8T	1	0.1	8T	3	0.2	9	7	0.0	11T	2	0.1	53.8 ± 9.0	36.2 ± 11.0
Chapman Mills – Rideau Crest – Davidson Heights	5T	1	0.1	8T	1	0.1	11	2	0.1	11	3	0.0	12T	1	0.1	52.9 ± 11.7	38.7* ± 18.6
Cumberland	6T	0	0.0	7T	1	0.2	10	1	0.2	13T	1	0.0	9	1	0.2	59.6 ± 10.2	NR
Fitzroy Harbour – West Carleton	6T	0	0.0	8T	1	0.1	6T	3	0.3	13T	1	0.0	6T	3	0.3	NR	NR
Glen Cairn – Kanata South Business Park	1	3	0.4	3	3	0.4	3	3	0.4	1	14	0.2	1	8	1.0	68.0 ± 12.9	24.6* ± 10.6
Hunt Club Woods – Quintarra – Revelstoke	6T	0	0.0	7T	1	0.2	4T	2	0.4	12T	2	0.0	5	2	0.4	42.1* ± 15.7	NR
Katimavik–Hazeldean	4	3	0.2	4	4	0.3	8T	3	0.2	2	19	0.1	2	10	0.7	43.0 ± 10.5	45.2 ± 7.1
Orleans Avalon – Notting Gate – Fallingbrook – Gardenway South	3	6	0.2	9	1	0.0	7	7	0.2	8	15	0.0	10	3	0.1	51.1 ± 6.6	37.4* ± 12.3
Orleans Chapel Hill	6T	0	0.0	2	4	0.5	9	2	0.2	4	11	0.1	8	2	0.2	46.4 ± 10.7	47.8* ± 16.8

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Overweight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/Veg (≥5 servings/day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Orleans Chatelaine Village	6T	0	0.0	10T	0	0.0	4T	2	0.4	12T	2	0.0	13T	0	0.0	NR	NR
Orleans North West	5T	1	0.1	10T	0	0.0	6T	3	0.3	10	4	0.0	12T	1	0.1	56.7 ± 9.5	41.7 ± 11.0
Orleans Queenswood Heights	6T	0	0.0	6	3	0.2	5T	4	0.3	5	8	0.1	11T	2	0.1	56.4 ± 9.3	33.3 ± 10.4
Orleans Village – Chateauneuf	5T	1	0.1	8T	1	0.1	5T	4	0.3	3	14	0.1	3	8	0.6	60.5 ± 6.9	42.8 ± 10.4
Ottawa South	6T	0	0.0	1	5	0.6	1	4	0.5	6	7	0.1	4	5	0.6	NR	NR
Playfair Park – Lynda Park – Guildwood Estates	6T	0	0.0	10T	0	0.0	12	0	0.0	14	0	0.0	13T	0	0.0	39.1* ± 14.1	71.5 ± 20.1
Rothwell Heights – Beacon Hill North	6T	0	0.0	5	3	0.3	2	4	0.4	12T	2	0.0	6T	3	0.3	44.6 ± 10.7	57.8 ± 10.3
Trend-Arlington	2	1	0.3	10T	0	0.0	12	0	0.0	7	5	0.1	7	1	0.3	NR	40.6

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Overweight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/Veg (≥5 servings/day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 3																	
Bells Corners East	2	2	0.4	6	3	0.7	4	5	1.1	3	16	0.4	2	18	4.0	46.9* ± 17.3	33.2* ± 17.0
Bells Corners West	6T	0	0.0	4	4	0.9	8	3	0.7	9	2	0.0	5	6	1.4	48.4* ± 17.6	NR
Blackburn Hamlet	5T	1	0.1	10	1	0.1	11	3	0.4	8T	3	0.0	12T	2	0.2	57.4 ± 12.4	38.0* ± 18.6
Byward Market	6T	0	0.0	1	27	6.0	5	4	0.9	1	59	1.3	1	77	17.0	40.0* ± 14.3	50.0* ± 20.6
Carlingwood West – Glabar Park – McKellar Heights	4T	1	0.2	3	6	1.1	3	6	1.1	5T	7	0.1	6	7	1.3	NR	35.9* ± 13.1
Centrepointe	6T	0	0.0	11T	0	0.0	13	2	0.3	8T	3	0.0	11T	2	0.3	40.9* ± 14.5	NR
Greenbelt	6T	0	0.0	9	1	0.2	7	4	0.7	5T	7	0.1	10T	2	0.4	NR	NR
Hunt Club Park	6T	0	0.0	11T	0	0.0	15	1	0.1	10T	1	0.0	11T	2	0.3	50.0 ± 14.8	37.8 ± 9.3
Hunt Club Upper –Blossom Park – Timbermill	5T	1	0.1	11T	0	0.0	2	8	1.1	7T	5	0.1	14	1	0.1	48.9 ± 14.6	48.3* ± 16.7
Laurentian	5T	1	0.1	5	8	0.8	16	0	0.0	4	19	0.2	9	4	0.4	41.8 ± 11.8	56.0 ± 15.2
Lindenlea – New Edinburgh	6T	0	0.0	11T	0	0.0	12T	2	0.4	7T	5	0.1	4	12	2.3	34.0* ± 13.5	47.0* ± 22.1

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Overweight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/Veg (≥5 servings/day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Orleans Central	1	3	0.9	2	7	2.0	1	5	1.4	2	31	0.9	3	10	2.9	56.3 ± 17.2	40.6* ± 24.6
Riverside Park	4T	1	0.2	11T	0	0.0	14	1	0.2	11	0	0.0	8	4	0.9	NR	53.8* ± 24.1
Rockcliffe – Manor Park	6T	0	0.0	11T	0	0.0	9	3	0.6	10T	1	0.0	10T	2	0.4	28.9* ± 14.4	NR
Tanglewood	6T	0	0.0	11T	0	0.0	12T	2	0.4	6	6	0.1	13	1	0.2	NR	NR
Westboro	3	2	0.2	8	2	0.2	6	7	0.7	7T	5	0.1	7	10	1.1	38.7 ± 12.1	44.5 ± 13.0
Woodvale – Craig Henry – Manordale – Estates of Arlington Woods	6T	0	0.0	7	4	0.5	10	4	0.5	8T	3	0.0	12T	2	0.2	59.0 ± 12.3	38.7* ± 19.3

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Over-weight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/ Veg (≥5 servings/ day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 4																	
Beacon Hill South – Cardinal Heights	7T	1	0.1	7T	1	0.1	9	5	0.7	5	14	0.2	14T	1	0.1	51.2 ± 14.9	51.2* ± 24.6
Billings Bridge – Alta Vista	2	3	0.3	2	13	1.1	14	4	0.3	3	19	0.2	5	10	0.8	53.7 ± 10.8	38.2* ± 12.8
Borden Farm – Stewart Farm – Parkwood Hills – Fisher Glen	4	2	0.2	8T	0	0.0	16T	1	0.1	13T	4	0.0	14T	1	0.1	41.8 ± 11.8	36.5 ± 10.8
Braemar Park – Bel Air Heights – Copeland Park	8T	0	0.0	8T	0	0.0	16T	1	0.1	11	4	0.1	14T	1	0.1	48.1 ± 13.6	35.4* ± 15.5
Carleton Heights – Rideauview	5	1	0.2	8T	0	0.0	3	6	0.9	6	10	0.2	7	4	0.6	42.6* ± 14.1	54.7 ± 13.7
Carson Grove – Carson Meadows	7T	1	0.1	7T	1	0.1	8	6	0.7	10T	5	0.1	9	4	0.5	49.3 ± 11.6	34.6* ± 12.6
Centretown	6T	2	0.1	1	28	1.2	1	23	1.0	1	148	0.6	1	113	4.7	38.9 ± 10.1	33.6 ± 6.6
Cityview – Skyline – Fisher Heights	3	2	0.3	4	4	0.6	6	5	0.8	2	16	0.3	2	13	2.1	63.4 ± 14.7	32.6* ± 15.7
Crestview – Meadowlands	1	4	0.5	3	5	0.6	10	4	0.5	4	17	0.2	6	7	0.8	57.4 ± 13.2	30.3* ± 12.7
Crystal Bay – Lakeview Park	8T	0	0.0	8T	0	0.0	12	2	0.5	15	1	0.0	10	2	0.5	53.6 ± 10.7	35.8* ± 17.0

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Over-weight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/ Veg (≥5 servings/ day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Elmvale – Eastway – Riverview – Riverview Park West	6T	2	0.1	8T	0	0.0	5	12	0.8	9	9	0.1	13	2	0.1	47.6 ± 9.6	41.2 ± 10.4
Greenboro East	8T	0	0.0	8T	0	0.0	16T	1	0.1	13T	4	0.0	15T	0	0.0	57.4 ± 14.1	42.7* ± 19.1
Hunt Club East – Western Community	7T	1	0.1	8T	0	0.0	13	3	0.4	13T	4	0.0	12	2	0.2	48.1 ± 13.6	47.3 ± 11.1
Hunt Club – Ottawa Airport	8T	0	0.0	6T	1	0.2	15	1	0.2	12	3	0.1	15T	0	0.0	NR	NR
Ottawa East	8T	0	0.0	5	2	0.4	7	4	0.8	10	5	0.1	8	3	0.6	32.9 ± 10.4	44.9 ± 12.4
Pineview	8T	0	0.0	8T	0	0.0	11	3	0.5	14	2	0.0	11	2	0.4	41.0* ± 15.4	NR
Sandy Hill – Ottawa East	8T	0	0.0	7T	1	0.1	2	10	0.9	8	12	0.1	4	13	1.2	38.1 ± 10.4	38.7 ± 9.9
Woodroffe – Lincoln Heights	8T	0	0.0	6T	1	0.2	4	4	0.9	7	7	0.2	3	6	1.4	NR	39.9* ± 19.7

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Overweight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/Veg (≥5 servings/day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 5 – Most disadvantaged socioeconomically																	
Bayshore	8T	0	0.0	8T	5	0.6	14	4	0.5	7T	15	0.2	14	6	0.8	56.3 ± 17.2	46.7* ± 19.1
Britannia Village	7	1	0.1	11	4	0.5	8	7	0.9	8	14	0.2	9	9	1.2	NR	NR
Carlington	8T	0	0.0	14	1	0.1	11	7	0.7	14T	4	0.0	11	9	0.9	52.3 ± 12.1	35.1 ± 10.5
CFB Rockcliffe-NRC	6T	1	0.2	15T	0	0.0	12	3	0.6	12	6	0.1	15	2	0.4	47.8 ± 11.8	43.0* ± 16.2
Cummings	5T	2	0.2	8T	5	0.6	7	8	0.9	6	19	0.2	5	17	2.0	35.1* ± 12.4	33.1* 13.4
East Industrial	2	4	0.5	3	8	1.0	3	11	1.3	3	28	0.3	2	24	2.9	NR	61.5* ± 20.8
Emerald Woods – Sawmill Creek	6T	1	0.2	13	1	0.2	16T	1	0.2	13	3	0.1	17T	1	0.2	NR	NR
Hawthorne Meadows – Sheffield Glen	8T	0	0.0	15T	0	0.0	16T	1	0.2	15	2	0.0	17T	1	0.2	51.4 ± 16.1	44.0* ± 21.5
Hintonburg – Mechanicsville	8T	0	0.0	10	5	0.5	1	19	2.0	7T	15	0.2	3	22	2.3	41.2* ± 13.5	39.2* ± 14.2
Iris	8T	0	0.0	9	4	0.6	9	6	0.9	11T	8	0.1	10	7	1.0	42.9* ± 16.4	30.1* ± 17.8
Ledbury – Heron Gate – Ridgemont – Elmwood	4	3	0.2	7	8	0.6	13	7	0.5	5	22	0.2	8	16	1.2	38.2* ± 12.8	20.0* ± 7.5

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Grocery stores			Specialty food stores			Convenience stores			Fast food outlets			Restaurants			% Overweight or obese (BMI ≥25.0 ± 95% CI)	% Fruit/Veg (≥5 servings/day)
	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Lowertown	5T	2	0.2	6	6	0.7	5T	9	1.1	10	9	0.1	6	14	1.7	37.7* ± 13.1	45.4* ± 15.7
Overbrook – McArthur	1	6	0.5	2	11	1.0	2	15	1.3	2	33	0.3	7	16	1.4	57.1 ± 8.6	24.4 ± 5.5
Qualicum – Redwood Park	8T	0	0.0	15T	0	0.0	17	0	0.0	16	1	0.0	18	0	0.0	NR	NR
South Keys – Heron Gate – Greenboro West	6T	1	0.2	5	4	0.9	6	5	1.1	1	19	0.4	4	10	2.1	NR	40.3* ± 24.0
Vanier North	5T	2	0.2	8T	5	0.6	5T	9	1.1	9	10	0.1	13	7	0.8	52.5 ± 9.8	27.9* ± 10.7
Vanier South	3	2	0.3	4	7	1.0	4	9	1.3	11T	8	0.1	12	6	0.9	61.7 ± 10.6	NR
West Centertown	8T	0	0.0	1	29	2.4	10	9	0.8	4	27	0.2	1	59	4.9	39.1* ± 14.1	36.5 ± 8.5
Whitehaven – Queensway Terrace North	8T	0	0.0	12	5	0.4	15	2	0.2	14T	4	0.0	16	2	0.2	39.0 ± 10.9	37.7* ± 13.9

Data source: Neighbourhood data – Ottawa Neighbourhood Study (2006); BMI data – Rapid Risk Factor Surveillance System (2003-2007); Vegetable and fruit consumption data – Canadian Community Health Survey (2001/03/05/07).
*=Interpret with caution due to high sampling variability, BMI – body mass index, CI – confidence interval, NR – not reportable, T – denotes a tie, Veg - vegetable

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

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CHAPTER 3

Active Living

3. ACTIVE LIVING

Active living encompasses both structured and unstructured physical activity, as well as reducing sedentary time or time spent inactive. Active living, similar to healthy eating, is also important for increasing quality of life and physical functioning, and reducing an individual's overall risk for obesity and several chronic diseases. Active living is achieved through the inclusion of daily physical activity, with the idea that more activity and less sedentary time are better. This section of the report provides data on various measures of active living including physical activity rates (self-reported and objectively measured using pedometers), time spent in active and passive transport, screen time, time spent sitting, time spent in physical education classes, and access to physical activity resources in the workplace. This section also provides information regarding the types of leisure physical activities that Ottawa adults participate in, possible barriers and enablers of physical activity, and the distribution of recreation resources across all Ottawa neighbourhoods.

We have profiled, where possible and appropriate, the information that is currently available at the local Ottawa level. However, it is important to acknowledge that the measures presented herein are not necessarily a comprehensive or all inclusive list of factors important to active living practices.

Canadian Physical Activity Guidelines

The *Canadian Physical Activity Guidelines* were developed by the Canadian Society for Exercise Physiology, in partnership with ParticipACTION and other stakeholders, and with support from the Public Health Agency of Canada. The guidelines provide physical activity recommendations for the early years (aged 0 to 4 years), children (aged 5 to 11 years), youth (aged 12 to 17 years), adults (aged 18 to 64 years), and older adults (aged ≥65 years) based on scientific evidence for reducing risk for several chronic diseases and premature mortality. **Table 15** provides a summary of the *Canadian Physical Activity Guidelines*. The *Canadian Physical Activity Guidelines* can be accessed using the following URL: **www.csep.ca/guidelines**.

Canadian physical activity guidelines for the early years (0 to 4 years)

Infants (aged less than 1 year): should be physically active several times daily – particularly through interactive floor-based play.

Toddlers (aged 1 to 2 years) and preschoolers (aged 3 to 4 years): should accumulate at least 180 minutes of physical activity at any intensity spread throughout the day, including a variety of activities in different environments; activities that develop movement skills; progression toward at least 60 minutes of energetic play by five years of age.

Overall: more daily physical activity provides greater benefits.

Table 15. Canadian physical activity guidelines for children, youth, adults, and older adults

	Children	Youth	Adults	Older Adults
	5-11 years	**12-17 years**	**18-64 years**	**≥65 years**
MVPA	≥60 minutes daily	≥60 minutes daily	≥150 minutes weekly	≥150 minutes weekly
VPA	≥3 times a week	≥3 times a week		
Strength training	≥3 times a week	≥3 times a week	≥2 times a week	≥2 times a week
Overall message	**The more the better!**			

Source: ***Canadian Physical Activity Guidelines***, 2011.
MVPA – moderate-to-vigorous physical activity, VPA – vigorous physical activity

Canadian Sedentary Behaviour Guidelines

In 2011, the Canadian Society for Exercise Physiology released the *Canadian Sedentary Behaviour Guidelines for Children and Youth*. Very recently in 2012, CSEP released the *Canadian Sedentary Behaviour Guidelines for the Early Years.* The guidelines are the first evidence informed guidelines in the world and provide recommendations for limits to the amount of recreational screen time and sedentary behaviour for children and youth. The Guidelines recommend that children should limit recreational screen time (television, computer, video games, etc.), motorized transportation, indoor time and extended sitting in the context of family, school and community (e.g., volunteer, employment) activities. The guidelines indicate that reductions in sedentary time can improve body composition, cardiorespiratory and musculoskeletal fitness, academic achievement, self-esteem, and social behaviours.
Table 16 provides a summary of the recommendations from the *Canadian Sedentary Behaviour Guidelines for the Early Years, Children and Youth*. The *Canadian Sedentary Behaviour Guidelines for the Early Years, Children and Youth* can be accessed using the following URL: **www.csep.ca/guidelines**. Unfortunately, sedentary guidelines have not yet been proposed for adults in Canada.

Table 16. Canadian sedentary behaviour guidelines for the early years, children and youth

	Infants and toddlers (0-2 years)	Preschoolers (2-4 years)	Children (5-11 years)	Youth (12-17 years)
Sedentary (screen) time	0 minutes daily	≤60 minutes daily	≤120 minutes daily	≤120 minutes daily
Overall message	**The lower the better!**			

Source: *Canadian Sedentary Behaviour Guidelines for Children and Youth*, 2011. *Canadian Sedentary Behaviour Guidelines for the Early years*, 2012.

Self-report versus directly measured physical activity

To date the majority of Canadian health behaviour and outcome data has been self-reported, but Canada has recently undertaken national, objective physical activity surveillance using accelerometry as part of the CHMS. Unfortunately, the CHMS data is not available at the local Ottawa level.

Accurate assessment of physical activity is required to identify current levels and monitor changes within the population, to improve the precision of determining the relationships between physical activity and health indicators, and to assess the effectiveness of interventions designed to increase activity levels. When collecting data at the population level, self-reported measures of physical activity (e.g. surveys, questionnaires, etc.) are largely used due to their practicality, low cost, low respondent burden, and general acceptance.[52] Self-reports are useful for gaining insight into a population's physical activity levels, but they have the capacity to over- or under-estimate true energy expenditure and rates of inactivity and are often wrought with issues of recall and response bias (e.g. social desirability, inaccurate memory) and are unable to capture absolute levels of physical activity. As such, self-reported measurements do not capture the same amounts of physical activity as more direct measures (accelerometers, pedometers, etc.).[53]

Almost all of the findings reported in the "Active Living" section are based on self-reported physical activity data for the Ottawa population. In light of the evidence that self-report measures likely overestimate true levels of physical activity (as measured using direct methods)[53], it is important to interpret these findings with caution and with the understanding that the proportion of the population that has been classified as active using self-report methods is likely overestimated.

Youth Physical Activity Rates

Physical activity plays an important role in promoting optimal growth and development and reducing the risk of overweight, obesity and several chronic conditions, as well as promoting optimal growth and development.[54] *Canada's Physical Activity Guidelines for Youth* recommends that youth (aged 12 to 17 years) achieve at least 60 minutes per day of moderate to vigorous physical activity.[55] The 2009 and 2011 OSDUHS asked students (grades 7 to 12) how many of the last seven days were they physically active for a total of at least 60 minutes each day. Physical activity was described as any activity that increased your heart rate and made you breathe hard some of the time. Physical activity was categorized as those meeting guidelines (i.e. 60 minutes per day every day), those who achieved 60 minutes a day for one to three days, those who achieved 60 minutes a day for four to six days, and students who were inactive or who did not report 60 minutes of physical activity on at least one day in the previous seven days.

HIGHLIGHTS

- Few (22%) Ottawa students in grades 7 to 12 reported meeting physical activity recommendations of 60 minutes per day.
- There was some indication that males may be more likely to meet current guidelines than females.
- Grade 7 to 8 students were more likely to be active on most days of the week than students in grades 9 to 12.
- There was some indication that students who reported lower family SES and father education levels were more likely to report being inactive or infrequently active; however, additional data are needed to confirm whether this difference truly exists.
- No significant differences in physical activity were observed by mother's education level, immigration status, language spoken at home, or BMI category.

Table 17. Physical activity rates of students (grades 7 to 12) by social determinants of health, Ottawa, 2009 – 2011

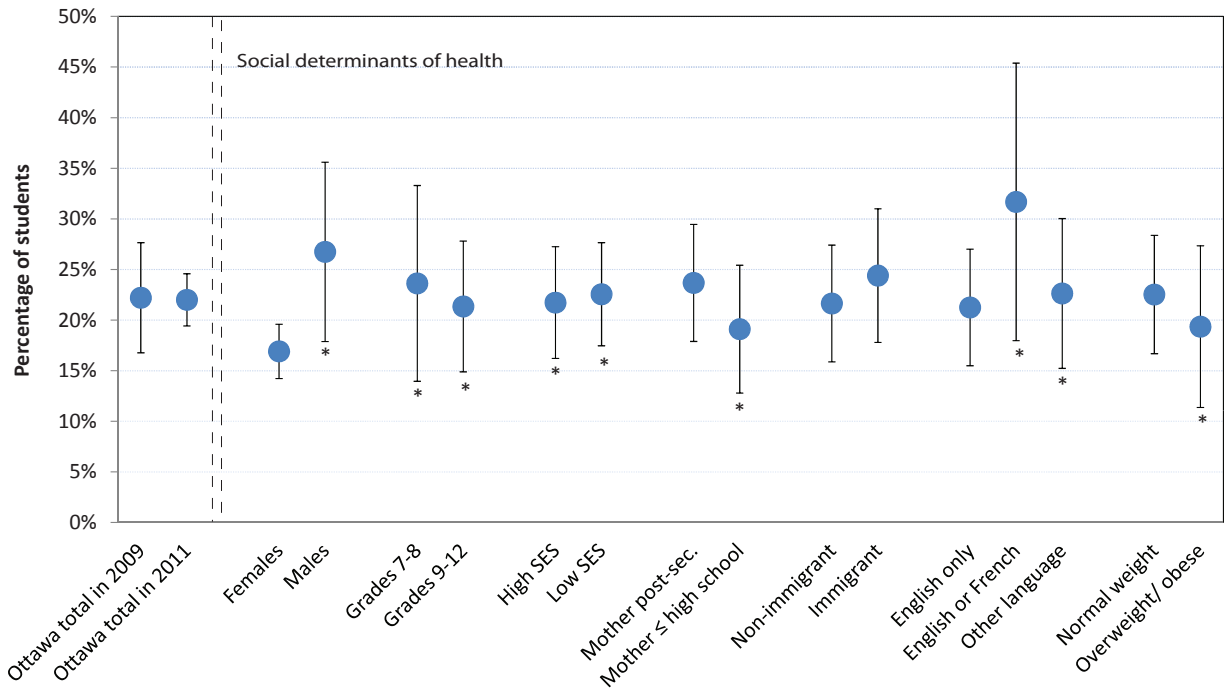
	Physical activity in 2011 (grades 7 to 12)	Historical patterns in physical activity (2009 vs. 2011)
Ottawa students	Overall, 22.0% (16.6%, 28.6%) of students in Ottawa reported **meeting current physical activity guidelines** in the 7 days prior to the survey. An additional 43.4% (35.7%, 51.4%) reported 60 minutes of physical activity on **4 to 6** of the previous 7 days, 29.7% (23.3%, 37.1%) reported 60 minutes of physical activity on **1 to 3** of the previous 7 days, and 4.9%* (3.3%, 7.3%) were **inactive** and did not report any days where they achieved 60 minutes of physical activity in the previous 7 days.	Similar patterns in physical activity were observed in 2009.
Rest of Ontario	Data are not releasable for 2011 at the time of this publication.	In 2009, no differences were observed between Ottawa and the rest of Ontario.
Social Determinants of Health (for Ottawa sample)		
Sex	Compared to males, females were more likely to be active for **1 to 3** days; however, due to sample size this difference was not statistically significant (34.6% (27.5%, 42.4%) vs. 25.2% (18.0%, 34.0%)).	A similar pattern was observed in 2009. In addition, there were more males than females who were active on **all** of the previous 7 days (27.2% (23.6%, 31.1%) vs. 16.8% (13.0%, 21.6%)).

	Physical activity in 2011 (grades 7 to 12)	Historical patterns in physical activity (2009 vs. 2011)
Grades	Students in grades 9-12 were more likely to report being active on **1 to 3** of the previous 7 days than students in grades 7-8 (34.4% (26.2%, 43.6%) vs. 18.0% (14.5%, 22.1%)). Students in grades 7-8 were more likely to report being active on **4 to 6** of the previous 7 days than students in grades 9-12 (56.4% (45.4%, 66.7%) vs. 38.2% (32.8%, 43.9%)).	In 2009, students in grades 9-12 were more likely to report being active on **1 to 3** of the previous 7 days than students in grades 7-8 (36.4% (30.5%, 42.7%) vs. 22.9% (18.4%, 28.2%)). Students in grades 7-8 were more likely to report being active on **all 7** of the previous days than students in grades 9 to 12 (32.5% (28.5%, 36.8%) vs. 18.0% (15.1%, 21.4%)).
Family SES	An important, but non-significant difference was observed where low SES students were more likely to be **inactive** than high SES students (8.4%* (4.9%, 13.8%) vs. 4.1%* (2.6%, 6.5%)).	Family SES was not available in 2009.
Father's education	No differences in physical activity were observed for paternal education level.	In 2009, students who reported their fathers had a high school education or less were more likely to be active **1 to 3** days; however, this difference was not statistically significant (44.0% (35.8%, 52.6%) vs. 30.4% (25.2%, 36.2%)). In 2009, students who reported their fathers had some post-secondary education were more likely to report being active **4 to 6** days; however, this difference was also not statistically significant (38.1% (33.6%, 42.8%) vs. 30.6% (25.7%, 36.0%)).
Mother's education	No differences in physical activity were observed by maternal education level.	There were no differences in physical activity by maternal education levels in 2009.

	Physical activity in 2011 (grades 7 to 12)	Historical patterns in physical activity (2009 vs. 2011)
Immigration status	No differences in physical activity were observed by immigration status.	There were no differences in physical activity by immigration status in 2009.
Language Spoken at home	No differences in physical activity were observed for language spoken at home.	There were no differences in physical activity by language spoken at home in 2009.
Body mass index	No differences in physical activity were observed between BMI categories.	There were no differences in physical activity by BMI category in 2009.

*=Interpret with caution due to high sampling variability. BMI –body mass index, SES – socioeconomic status.

Figure 15. Percentage of students in grades 7 to 12 who were physically active for 60 minutes or more on all of the previous 7 days by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.
Post-sec. – post-secondary, SES – socio-economic status.

Youth Time Spent in Physical Education

Physical education has the potential to increase a child's physical skills, can support the development of their social skills and self-esteem, and can increase academic performance.[56] The 2009 and 2011 OSDUHS asked students (grades 7 to 12) how many days in the last five school days they participated in physical activity for at least 20 minutes in physical education class in their school. Physical activity was described as any activity that increased your heart rate and made you breathe hard some of the time. Physical education was categorized as: 1) none: students who reported no days of physical education or those who reported they were not currently enrolled in physical education classes; 2) those who were physically active in physical education class from one to four of the previous five school days; and 3) those who reported being physically active in physical education class on all of the previous five school days.

HIGHLIGHTS

- Almost half (48%) of all Ottawa students in grades 7 to 12 reported that they were either not active in physical education or not enrolled in physical education classes.
- There was some indication that males are more likely than females to be regularly active (all five days) in physical education.
- Students in grades 7 to 8 were more likely than students in grades 9 to 12 to report being active in physical education classes. Two out of three (66%) students in grades 9 to 12 did not participate in physical education.
- No significant differences in physical education were observed by sex by grade, parental education, family SES, immigration status, language spoken at home, or BMI category.

Table 18. Physical education rates of students (grades 7 to 12) by social determinants of health, Ottawa, 2009 – 2011

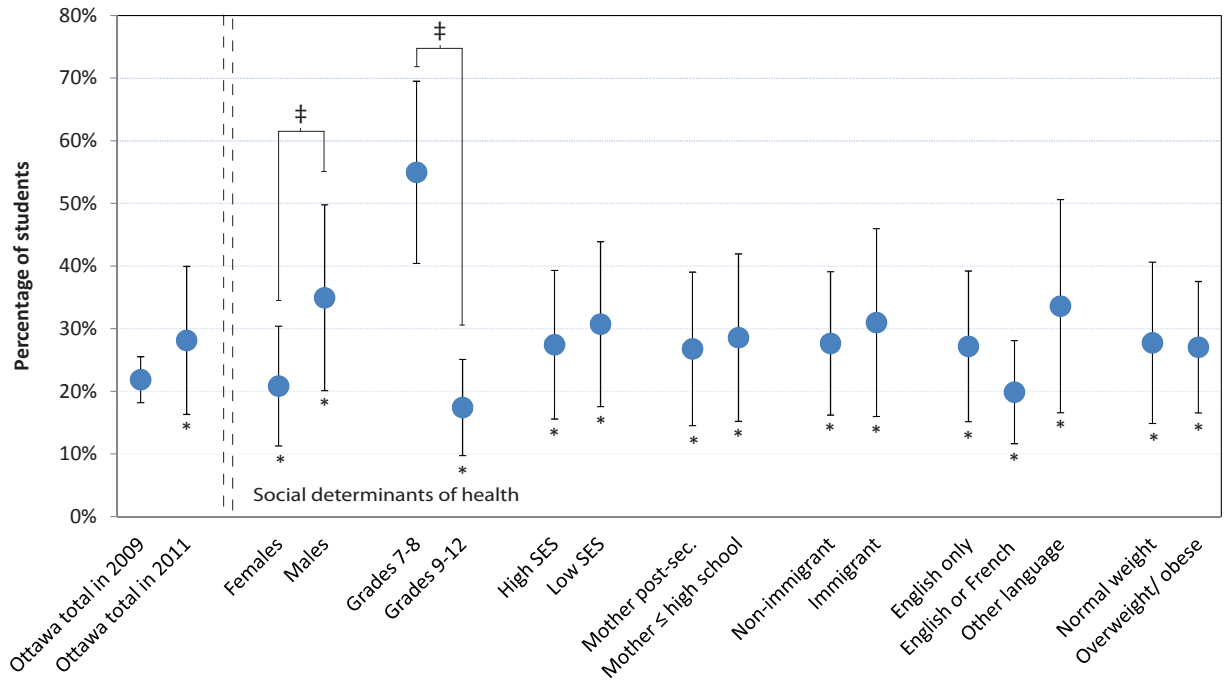
	Physical education in 2011 (Grades 7 to 12)	Historical patterns in physical education (2009 vs. 2011)
Ottawa students	Overall, 47.8% (31.6%, 64.4%) of students in Ottawa reported either **no** physical activity during physical education or were **not currently enrolled** in physical education. 24.1% (20.9%, 27.2%) reported being active in physical education for **1 to 4** of the previous 5 school days. 28.1% (16.3%, 44.0%) reported being active in physical education on **all** of the previous 5 school days.	In 2009, 52.2% (46.5%, 58.0%) of students in Ottawa reported either **no** physical activity during physical education or were **not currently enrolled** in physical education; this was significantly higher than in 2011. 25.9% (21.6%, 30.7%) reported being active in physical education for **1 to 4** of the previous 5 school days; this was also significantly higher than in 2011. Fewer students in 2009 (21.9% (18.2%, 26.0%) were active in physical education on **all** of the previous 5 days compared to students in 2011; although this difference was not statistically significant.
Rest of Ontario	Data are not releasable for 2011 at the time of this publication.	In 2009, students in the rest of Ontario were more likely than students in Ottawa to report being active in physical education for **1 to 4** of the previous 5 days prior to the survey (32.3% (30.2%, 34.3%) vs. 25.9% (21.6%, 30.7%)). Students in Ottawa were more likely to report **no physical education** than students in the rest of Ontario; however, this difference was not statistically significant (52.2% (46.5%, 58.0%) vs. 45.0% (42.7%, 47.2%)).
Social Determinants of Health (for Ottawa sample)		
Sex	Males were more likely than females to report being active in physical education on **all** of the previous 5 days (34.9%* (20.1%, 53.4%) vs. 20.8%* (11.3%, 35.3%)).	In 2009, females were more likely than males to report being active in physical education between **1 to 4** of the previous 5 days (29.1% (24.2%, 34.5%) vs. 22.9% (18.0%, 28.7%).

	Physical education in 2011 (Grades 7 to 12)	Historical patterns in physical education (2009 vs. 2011)
Grades	Students in grades 7-8 were more likely than students in grades 9-12 to report being active in physical education on **1 to 4** of the previous 5 school days (42.1% (31.8%, 53.2%) vs. 16.9% (14.5%, 19.6%)) and on **all 5** of the previous school days (55.0% (40.4%, 68.7%) vs. 17.4%* (9.7%, 29.2%)). 65.7% (53.4%, 76.2%) of students in grades 9-12 did not participate in physical education.	A similar pattern was observed in 2009, with the addition that students in grades 9-12 were more likely than students in grades 7-8 to report **no physical education** (66.6% (59.3%, 73.1%) vs. 17.6%* (12.0%, 24.9%)).
Sex by grade	Male students in grades 7-8 were more likely than females students in grades 7-8 to report physical education on **all 5 days**; however, this difference was not statistically significant (64.0%* (40.4%, 82.3%) vs. 45.6% (36.0%, 55.6%)). No differences in physical education were observed between sexes in grades 9-12.	In 2009, male students in grades 7-8 were more likely than females students in grades 7-8 to report **no physical education**; however, this difference was not statistically significant (20.5%* (13.2%, 30.4%) vs. 14.5%* (10.1%, 20.5%)). Female students in grades 7-8 were more likely than males students in grades 7-8 to report being active in physical education **1 to 4** of the previous 5 days; however, this difference was not statistically significant (53.6% (41.5%, 65.3%) vs. 36.4%* (24.8%, 50.0%)). No differences in physical education were observed between sexes in grades 9-12.
Family SES	No differences in physical education were observed between high and low SES students.	Family SES was not available in 2009.
Father's education	No differences in physical education were observed for paternal education level.	Similarly, no differences in physical education by paternal education were observed in 2009.

	Physical education in 2011 (Grades 7 to 12)	Historical patterns in physical education (2009 vs. 2011)
Mother's education	No differences in physical education were observed for maternal education level.	Similarly, no differences in physical education by maternal education were observed in 2009.
Immigration status	No differences in physical education were observed for immigration status.	Similarly, no differences in physical education by immigration status were observed in 2009.
Language spoken at home	No differences in physical education were observed for language spoken at home.	Similarly, no differences in physical education by language spoken at home were observed in 2009.
Body mass index	No differences in physical education were observed between BMI categories.	Similarly, no differences in physical education by BMI category were observed in 2009.

***=Interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.**

Figure 16. Percentage of students in grades 7 to 12 who were physically active in physical education on all of the previous five school days by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Post-sec. – post-secondary, SES – socio-economic status.

Adult All-Domain Physical Activity

The RRFSS physical activity module is used to assess physical activity across many different domains including leisure time, domestic and gardening activities, work-related and transport-related activity. The questions asked were taken from the *International Physical Activity Questionnaire* (IPAQ).[57] Participants were asked about the duration and intensity of their physical activity in the past seven days prior to the survey and were scored as having high, moderate, or low physical activity levels. Table 19 provides a description of these categories. Adults who were categorized in the high IPAQ category are those that are the most likely to be meeting current *Canadian Physical Activity Guidelines* of 150 minutes or more per week of MVPA using self-reported physical activity.

Table 19. Description of International Physical Activity Questionnaire (IPAQ) physical activity levels

IPAQ Category	Risk Level Implication	Physical Activity Description	Technical Description
High	Considered health-enhancing physical activity.	Equivalent to at least one hour per day or more of at least moderate-intensity activity OR half an hour of vigorous-intensity activity over and above basal levels daily.	High Active category would be those who obtain ≥12,500 steps per day, or the equivalent in moderate and vigorous activities. Meets any one of the following 2 criteria: • Vigorous-intensity activity ≥3 days and accumulating ≥1500 MET-minutes/week OR • ≥7 days of any combination of walking or moderate-or vigorous-intensity activities accumulating ≥3000 MET -minutes/week

IPAQ Category	Risk Level Implication	Physical Activity Description	Technical Description
Moderate	At risk of chronic disease and obesity.	Equivalent to half an hour of a least moderate-intensity physical activity on most days accumulated in leisure and work time (the former leisure time-based physical activity population health recommendation was for a half an hour in your leisure time).	Moderate Active category would be those who accumulate a minimum level of activity. Meets any of the following 3 criteria: • ≥3 days of vigorous activity of ≥20 minutes per day OR • ≥5 days of moderate-intensity activity and/or walking, in combination or alone, of ≥30 minutes per day OR • ≥5 days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of ≥600 MET -minutes/week.
Low	At highest risk of premature death due to cardio-vascular disease.	No activity is reported or some activity is reported but not enough to meet moderate or high category.	Low activity would be those who do not meet the criteria of the other categories.

Data Note: A MET is the ratio of energy expended in kilocalories per kilogram of body weight divided by resting energy expenditure in kilocalories/kg. A MET is a unit of resting metabolic rate. Thus, two METs are equivalent to an intensity twice that of the resting metabolic rate.

HIGHLIGHTS

- Physical activity levels have remained stable since 2003, with half (51%) of Ottawa adults (aged ≥18 years) having self-reported high physical activity levels in 2011.
- Physical activity levels decreased with increasing age.
- Adults with high household incomes, those who are more educated and those with an English only mother tongue were more likely to report **high** physical activity.
- There was some indication that males and normal weight adults may be more active than females and overweight and obese adults; however, additional data are needed to confirm whether these differences truly exist.

Table 20. Physical activity rates of adults (aged ≥18 years) by social determinants of health, Ottawa, 2003 – 2011

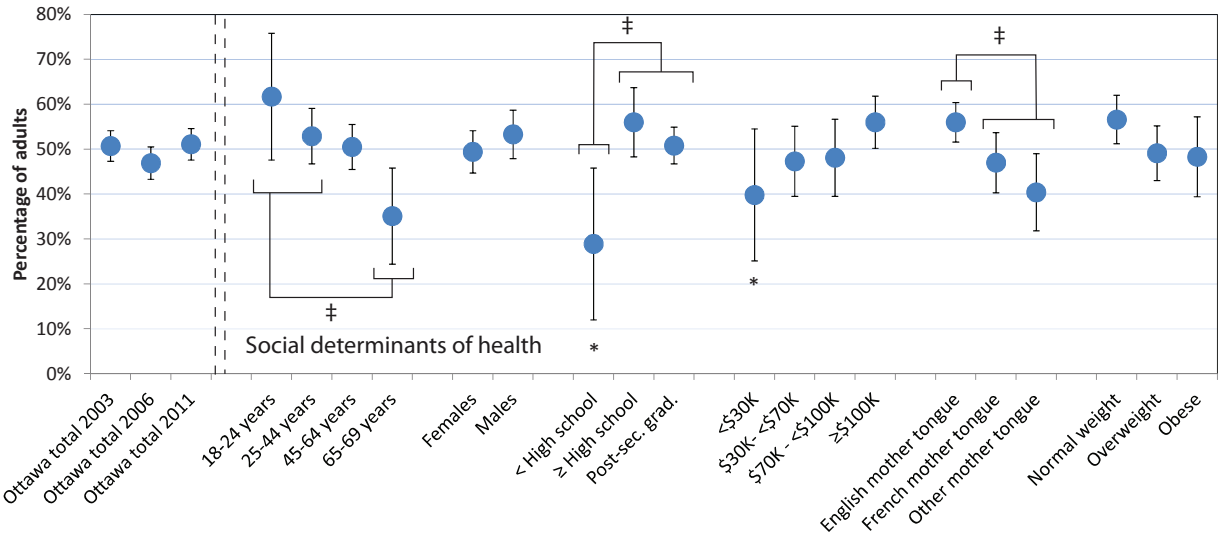
	Adult all-domain physical activity in 2011(aged ≥18 years)	Historical patterns in physical activity levels (2003 – 2009)
Ottawa total	Overall, 51.1% (47.5%, 54.6%) of Ottawa adults self-reported **high** physical activity levels across all domains. An additional 31.3% (28.0%, 34.5%) self-reported **moderate** physical activity levels and 17.7% (14.9%, 20.4%) self-reported **low** physical activity levels.	No apparent trends in adult physical activity levels were observed between 2003 and 2009.
Social Determinants of Health		
Age	The proportion of those who were **highly** physically active decreases in a linear fashion with increasing age: 61.7% (47.9%, 75.5%)) of 18-24 year olds, 52.9% (46.9%, 59.0%) of 35-44 year olds, 50.5% (45.5%, 55.4%) of 45-64 year olds, and 35.1% (24.0%, 46.1%)) of seniors reported **high** physical activity levels. Physical inactivity increases with age: 18.7%* (7.1%, 30.4%) of 18-24 year olds, 14.6% (10.4%, 18.8%) of 25-44 year olds, 17.5% (13.7%, 21.3%)) of 45-64 year olds and 30.6%* (19.3%, 41.9%)) of seniors were **inactive**.	Similar patterns in physical activity levels by age were seen between 2003 and 2009.
Sex	There is some indication that males might be more active than females. While males were more likely than females to report **high** physical activity (53.3% (47.9%, 58.8 %) vs. 49.5% (44.8%, 54.2%)), females were more likely to report moderate physical activity (32.9% (28.5%, 37.2%) vs. 28.9% (24.0%, 37.2%)). However, these differences were not statistically significant.	Between 2003 and 2009, males consistently reported higher levels of **high** activity than females. While these differences were not statistically significant, they may be an important indication of a difference in activity levels by sex.

	Adult all-domain physical activity in 2011(aged ≥18 years)	Historical patterns in physical activity levels (2003 – 2009)
Education	Physical activity levels increased with increasing education. Adults who completed high school or some post-secondary education (56% (48.3%, 63.7 %)), and post-secondary graduates (50.8% (46.7%, 54.9 %)) were more likely to self-report **high** physical activity than adults with less than a high school education (28.9%* (11.5%, 46.3%)). Adults with less than a high school education (28.8%* (13.8%, 43.7 %)) were more likely to report **low** physical activity than adults who completed some post-secondary education 21.2% (14.8%, 27.6%) or post-secondary graduates (16.0% (12.9%, 19.1%)); however, these differences were not statistically significant.	Physical activity data fluctuates across education levels between 2003 and 2009. However, adults with higher education were more likely to self-report **high** physical activity than adults with less than a high school education.
Household income	There is some indication that residents of the highest income category (≥$100K: 56.0% (50.1%, 62.0%)) were more likely to be **highly** active than those in the lowest income categories (<$30K: 39.8% (25.0%, 54.7%)); however these differences were not statistically significant. In addition, residents of the highest income category were also more likely to be **highly** active than those in the middle income categories ($30K to <$70K: 47.3% (39.5%, 55.1%); $70K to <$100K: 48.1% (39.6%, 56.6%)). Residents in the lowest income category (32.1%* (16.7%, 47.5%)) were more likely to report **low** physical activity compared to those in the highest income categories ($70K to <$100K: 21.5% (14.2%, 28.7%); ≥$100K: 10.3% (6.5%, 14.1%)).	Similar patterns in physical activity levels by income were seen between 2003 and 2009.

	Adult all-domain physical activity in 2011(aged ≥18 years)	Historical patterns in physical activity levels (2003 – 2009)
Mother tongue language	Adults whose mother tongue is English (56.0% (51.4%, 60.5%)) were more likely to report **high** physical activity than those with a mother tongue other than English or French (40.4% (30.7%, 50.0%)). Adults whose mother tongue is French and those whose mother tongue is neither English nor French were most likely to report **low** physical activity (French: 21.1% (15.4%, 26.7%); other language: 24.4%* (16.2%, 32.6%)).	Physical activity data fluctuates by mother tongue language between 2003 and 2009; however, on average/ overall a similar pattern in physical activity levels occurred for most of these years.
Body mass index	There is some indication that normal weight adults were more likely than overweight adults to report **high** physical activity (56.6% (51.1%, 62.0 %) vs. 49.1% (43.0%, 55.2%)). There is also some indication that normal weight adults were also more likely to report high physical activity than obese adults (48.3% (39.1%, 57.5%)). However, both of these differences were not statistically significant.	A similar pattern in physical activity levels occurred for most of these years, except in 2003, 2004 and 2006, when normal weight and overweight adults reported similar physical activity levels.

*=Interpret with caution due to high sampling variability. K – thousand.

Figure 17. Percentage of adults (≥18 years) who report high levels of physical activity by social determinants of health, Ottawa, 2011.



Data source: Rapid Risk Factor Surveillance System (RRFSS), 2003, 2006, 2011.
*= Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, K – thousand, Post-sec. – post-secondary.

Adult Leisure time Physical Activity

Leisure time physical activity is assessed in the CCHS by asking respondents about their participation in various types of leisure activities in the previous three months.

The *Physical Activity Index* classifies individuals based on the sum of the average daily energy expenditure of all their leisure time activities (measured in kcal/kg/day). Individuals are classified as follows:

- ≥3.0 kcal/kg/day = physically active
- 1.5 – 2.9 kcal/kg/day = moderately active
- <1.5 kcal/kg/day = inactive

HIGHLIGHTS

- Approximately 291,500 (42%) Ottawa adults (aged ≥18 years) were **inactive** during their leisure time in 2009/10. Only 30% of adults were **active** in their leisure time.
- Since 2003, Ottawa adults have been more active in their leisure time than adults in the rest of Ontario.
- Males have historically reported higher levels of leisure time activity; however the gender gap has narrowed.
- Inactivity during leisure time increased with age.
- There was some indication that adults with lower education levels were more likely to report lower levels of leisure time physical activity; however, additional data are needed to confirm whether these differences truly exist.
- Adults in the highest household income bracket tended to report the highest levels of activity during leisure time.
- There was some indication that immigrants were less active in leisure time than non-immigrants.
- The pattern of leisure time physical activity appears to be U-shaped by BMI category, as underweight and obese adults were more likely to be inactive during their leisure time.
- No significant differences in adult leisure-time physical activity were observed by urban/rural residence.
- The most popular type of leisure time activity was walking. One third of adults reported regular walking and walked on average 17 times per month.

Table 21. Leisure time physical activity rates of adults (aged ≥18 years) by social determinants of health, Ottawa, 2003 – 2009/10

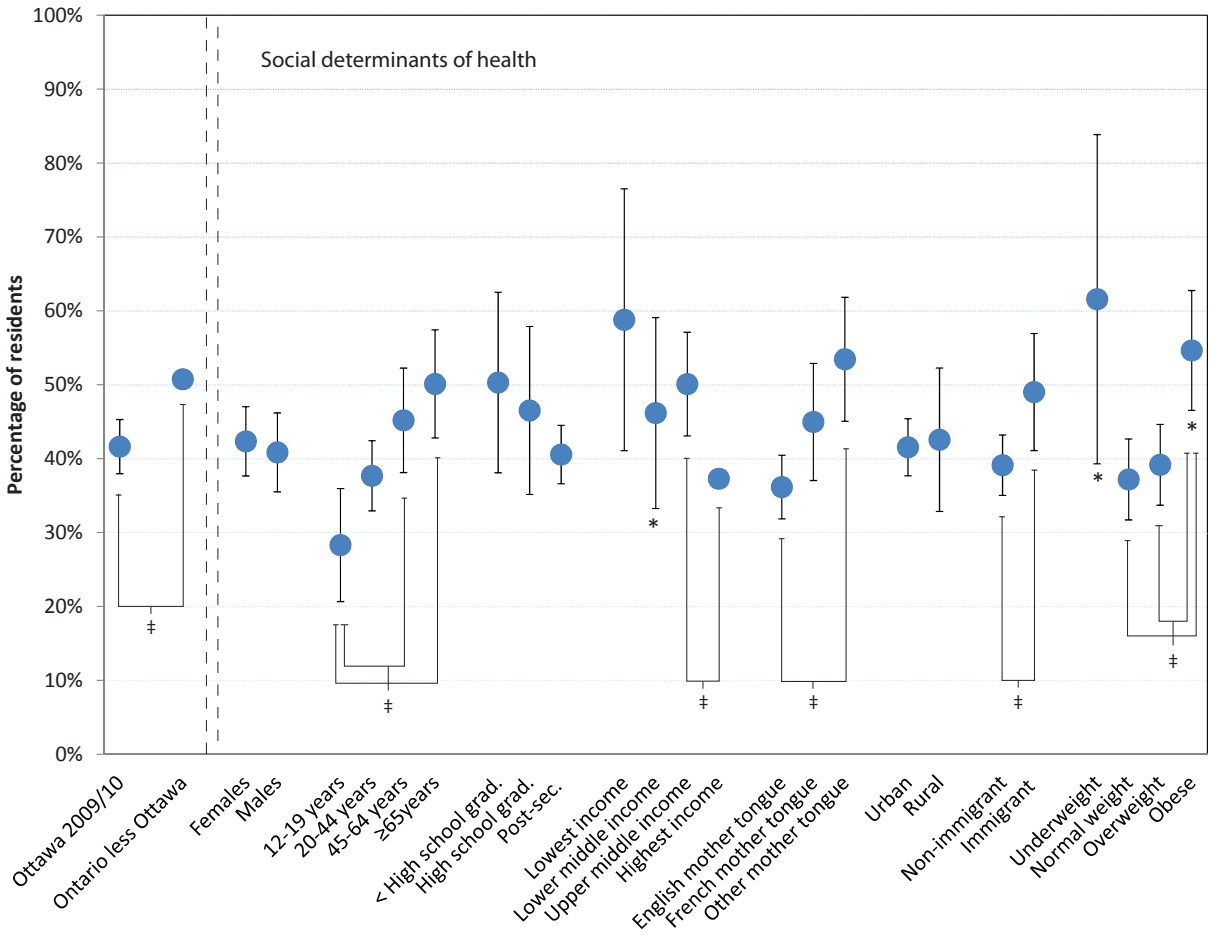
	Leisure time physical activity in 2009/10 (aged ≥18 years)	Historical patterns in leisure time physical activity (2003-2007/08)
Total sample	In 2009/10, 29.5% (26.1%, 32.8%) or approximately 206,300 Ottawa adults were **highly active** during their leisure time, while 27.5% (24.1%, 30.9%) were **moderately active** and 41.7% (37.9%, 45.3%) were **inactive**.	Similar leisure time activity levels were seen in Ottawa adults between 2003 and 2007/08.
Rest of Ontario	Ottawa adults were more likely to be highly and moderately active in their leisure time and less likely to be inactive than the rest of the province. In the rest of Ontario, 24.3% (23.5%, 25.1%) of adults were **highly** active, 23.1% (22.3%, 23.9%) were **moderately** active and 50.8% (49.8%, 51.7%) were **inactive** during their leisure time.	Similar differences were seen between 2003 and 2007/08.
Social Determinants of Health (for Ottawa sample)		
Sex	In 2009/10, a higher proportion of males (31.2% (26.1%, 36.4%)) reported **high** leisure time activity levels than females (27.8% (23.6%, 32.0%)); however, this difference was not statistically significant.	Between 2003 and 2008, males again reported higher levels of activity; however, the gender gap narrowed with an increase in the proportion of females reporting **high** levels of leisure time physical activity.

	Leisure time physical activity in 2009/10 (aged ≥18 years)	Historical patterns in leisure time physical activity (2003-2007/08)
Age	**High** levels of leisure time physical activity decrease with increasing age. Youth 12-19 years of age reported high activity levels at 47.1% (37.4%, 56.8%), compared to 31.9% (27.4%, 36.4%) of adults aged 20-44 years, 26.5% (20.6%, 32.4%) of adults aged 45-64 years, and 18.8% (13.9%, 23.7%) of seniors. **Inactivity** during leisure time increases with increasing age. 28.3% (20.7%, 36.0%) of youth 12-19 years, 37.7% (32.9%, 42.4%) of adults 20-44 years, 45.2% (38.1%, 52.3%) of adults 45-64 years, and 50.1% (42.8%, 57.4%) of seniors report being **inactive** during their leisure time.	Similar patterns in leisure time activity levels by age were seen between 2003 and 2007/08.
Education	There was no apparent difference in leisure time physical activity by education.	In previous years, there was some indication of differences in leisure time physical activity levels by education. In 2003, adults with less than high school most frequently reported being physically **inactive** during leisure time (54.5% (45.1%, 63.9%)), this decreased with higher education (high school graduate: 48.3% (42.1%, 54.6%); post-secondary: 43.3% (39.3%, 47.3%)). This pattern was borderline statistically significant. In 2005, adults with post-secondary education were least likely to be **inactive** during leisure time (39.1% (35.6%, 42.7%)) and adults with lower education levels (<high school or high school graduation) were least likely to be **highly** active during leisure time (<high school: 17.0%* (9.2%, 24.7%); high school graduate: 22.7% (15.6%, 29.9%); post-secondary: 31.1% (27.9%, 34.2%)). No apparent trend was seen for 2007/08.

	Leisure time physical activity in 2009/10 (aged ≥18 years)	Historical patterns in leisure time physical activity (2003-2007/08)
Household income	Adults in the highest income category were more likely to be **highly** active (31.2% (26.7%, 35.7%)) and the least likely to be **inactive** during leisure time (37.3% (32.4%, 42.3%)).	This pattern emerged for previous years. In 2007/08 and 2005, adults in the highest income category were less likely to be **inactive** during leisure time. There is some indication that adults living in households below the LICO were more **inactive** than higher income levels.
Urban/rural	There were no differences in leisure time physical activity levels between adults living in urban and rural areas of Ottawa.	There were no differences in leisure time physical activity levels in urban and rural areas of Ottawa between 2003 and 2007/08.
Mother tongue language	Adults with a mother tongue language other than English or French more frequently reported being **inactive** during their leisure time (53.5% (45.1%, 61.8%)), while those with English mother tongue were least likely to be **inactive** (36.2% (31.9%, 40.5%)). Adults with French mother tongue were most likely to be **highly** active during leisure time (35.5% (28.2%, 42.8%)).	This difference was not seen in 2007/08. In 2005, there was some indication of an opposite pattern, where adults with English mother tongue were more likely to be **highly** active during leisure time (31.6% (28.2%, 34.9%)) compared to adults with French mother tongue language (26.1% (20.4%, 31.8%)) however this difference was not statistically significant.
Immigration	Immigrants were more likely to be **inactive** (39.1% (35.1%, 43.2%)) during leisure time than non-immigrants (49.0% (41.1%, 56.9%)).	Similarly, between 2005 and 2007/08, immigrants were more likely to be inactive during leisure time than non-immigrants.
Body mass index	The pattern of leisure time physical activity by BMI appears to be U-shaped. Obese adults (54.7% (46.6%, 62.8%)) were more likely than normal (37.2% (31.7%, 42.7%)) or overweight adults (39.2% (33.7%, 44.7%)) to be **inactive** during their leisure time and there was some indication that underweight adults were also inactive during leisure time (61.6%* (39.3%, 83.9%)).	This U-shaped pattern emerged in previous years. More obese and underweight adults reported being inactive during leisure time (not statistically significant in 2003, but significant in 2005, underweight trend not significant in 2007/08).

*= Interpret with caution due to high sampling variability. BMI – body mass index

Figure 18. Percentage of adults (≥18 years) who are inactive during leisure time by social determinants of health, Ottawa, 2009/10.



Data source: Canadian Community Health Survey (2009/2010). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, post-sec. – post-secondary.

Type and Frequency of Leisure Time Physical Activities

In 2009/10 the most popular type of leisure time physical activity in Ottawa was walking. Other common leisure time activities included gardening, home exercises, swimming, jogging, swimming, weight training, dancing and exercise class or aerobics (**Table 22**).

Walking was the most common type of leisure time activity. Adults who walked in their leisure time did so an average of 17 times per month. In addition, one third of adults reported regular walking (walking four or more times per week during leisure time).

Females were more likely than males to report walking, dancing and exercise classes or aerobics in their leisure time. Males were more likely to report gardening or yard work, bicycling, golfing, ice skating, soccer, fishing, ice hockey, basketball, and tennis in their leisure time.

Generally, youth aged 12 to 19 years were more likely than adults and seniors to report participating in most leisure time activities except for walking and golfing, for which there were no differences in participation by age.

Adults with household incomes above the LICO were more likely than higher income groups to report walking, gardening or yard work, home exercises, weight training, and exercise class or aerobics in their leisure time. There were however, no significant differences between the average number of times per month adults with household incomes below the LICO and adults with household incomes above the LICO participated in the selected activities, with the exception of walking (below LICO = 22.5 times per month, above LICO = 15.8 times per month) and soccer (below LICO = 1.7 times per month, above LICO = 4 times per month).

It is important to note that these data were collected over a year and activities and their frequency likely varied with season.

Motorized and Active Transportation among Youth

Youth who actively commute to school tend to be more physically active overall than youth who use motorized forms of transportation.[58] The 2011 OSDUHS (not asked in 2009) asked students in grades 7 to 12 how they usually travelled to school and how they usually travelled home from school. Modes of transportation were categorized as: 1) motorized transport (students who reported traveling by car, school bus, public bus, or by subway/streetcar); 2) active transport (students who reported traveling by walking or cycling); and 3) other (students selected that they used another form of transport).

HIGHLIGHTS

- Very few Ottawa students in grades 7 to 12 reported using active forms of transportation to (20%) and from (28%) school.
- Males and students who spoke only English at home were most likely to report using active modes of transportation.
- No significant differences in mode of transportation were observed by grade, family SES, parental education, immigration status, or BMI category.

Table 22. Percentage of adults participating in selected leisure time physical activities and average number of times per month, Ottawa, 2009/10.

	Adults ≥18 years		Males ≥18 years		Females ≥18 years		Below LICO ≥18 years		Above LICO ≥18 years		12-19 years (1)		20-64 years (2)		≥65 years (3)		Differences by age
	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	Differences by age (age group comparisons)
Walking for exercise	74.6 ± 3.0	17.3	71.5 ± 4.8	16.8	77.5 ± 3.6‡	17.7	66.6 ± 8.7	22.5	77.7 ± 3.3‡	15.8‡	65.0 ± 9.0	16.6	75.1 ± 3.6	17.0	74.1 ± 5.7	19.3	
Gardening/yard work	45.9 ± 3.8	6.0	51.6 ± 5.4	5.5	40.7 ± 4.9‡	6.6	19.5* ± 8.1	9.0	52.5 ± 4.5‡	5.6	32.9 ± 7.8	4.0	47.9 ± 4.3	5.6	39.4 ± 6.7	9.3	(1,2)
Home exercises	38.2 ± 3.5	11.9	36.0 ± 5.2	11.8	40.3 ± 4.5	12.0	28.0* ± 9.2	12.7	39.7 ± 4.1‡	11.5	51.8 ± 9.2	12.6	38.8 ± 4.0	11.1	30.6 ± 5.7	16.7	(1,2)
Regular walker (≥4 times per week)	33.1 ± 3.1	NA	30.0 ± 4.6	NA	35.9 ± 4.1	NA	35.1 ± 10.2	NA	32.7 ± 3.6	NA	29.2* ± 10.3	NA	32.0 ± 3.5	NA	39.5 ± 7.1	NA	(1,2)(1,3)
Swimming	25.6 ± 3.1	4.5	25.0 ± 4.4	4.5	26.1 ± 4.2	4.5	20.9* ± 8.7	6.0	27.5 ± 3.8	3.9	47.0 ± 8.7	4.8	26.5 ± 3.6	4.2	16.7* ± 5.9	6.9	(1,2)(1,3)(2,3)
Jogging or running	25.6 ± 2.9	7.7	27.6 ± 4.5	7.2	23.7 ± 3.7	8.3	17.9* ± 8.0	9.2	26.7 ± 3.6	7.7	59.0 ± 9.9	7.9	27.9 ± 3.5	7.4	NR	12.9	(1,2)(1,3)(2,3)
Bicycling	25.4 ± 3.7	7.0	29.7 ± 4.9	7.8	21.4 ± 4.6‡	6.0	21.4* ± 8.0	14.5	26.5 ± 4.2	5.5	49.1 ± 10.8	9.3	27.0 ± 3.9	6.5	8.7* ± 4.4	6.5	(1,2)(1,3)(2,3)
Weight training	25.4 ± 3.2	8.7	28.1 ± 5.1	9.1	22.9 ± 4.0	8.2	17.1* ± 7.6	9.8	28.1 ± 3.8‡	8.3	29.8 ± 7.4	11.7	28.2 ± 3.8	8.3	5.3* ± 2.6	10.5	(1,2)(1,3)(2,3)
Popular or social dance	17.0 ± 2.5	2.5	10.4 ± 3.2	2.9	23.0 ± 3.7‡	2.3	15.9* ± 7.8	3.4	15.6 ± 2.7	2.1	34.7 ± 10.3	2.9	17.2 ± 2.8	2.4	8.1* ± 4.9	3.6	(1,2)(1,3)(2,3)
Exercise class or aerobics	15.4 ± 2.2	7.4	8.2 ± 2.4	7.5	22.1 ± 3.6‡	7.4	8.2* ± 4.2	8.3	17.9 ± 2.9‡	7.2	17.3* ± 5.8	9.5	16.4 ± 2.5	7.4	9.8 ± 3.1	9.0	(1,3) (2,3)
Golfing	12.2 ± 2.6	2.9	17.1 ± 4.4	3.0	7.6* ± 2.7‡	2.6	NR	NR	14.8 ± 3.1	2.8	10.9* ± 5.7	2.2	12.7 ± 3.1	2.6	9.4* ± 4.0	5.8	
Ice skating	10.0 ± 2.2	1.7	13.1 ± 3.6	1.9	7.1 ± 2.1‡	1.4	NR	NR	9.8 ± 2.2	1.7	22.1* ± 7.6	2.2	11.4 ± 2.6	1.8	NR	NR	(1,2)(1,3)(2,3)
Soccer	8.6 ± 1.7	4.7	11.7 ± 3.0	5.0	5.7* ± 2.1‡	4.3	11.2* ± 7.0	1.7	6.4 ± 1.7	4.0‡	47.0 ± 10.2	5.3	8.1 ± 1.9	4.0	NR	NR	(1,2)
Fishing	8.0 ± 2.1	1.6	12.5 ± 3.7	1.6	3.8* ± 2.1‡	1.4	NR	NR	7.8 ± 2.4	1.8	11.7* ± 6.6	1.4	8.4 ± 2.3	1.7	NR	NR	
Ice hockey	7.7 ± 1.9	5.3	14.0 ± 3.8	5.7	1.8* ± 1.1‡	2.1‡	NR	NR	7.5 ± 2.0	5.0	14.3* ± 5.4	9.6	9.1 ± 2.2	5.4	NR	NR	

	Adults ≥18 years		Males ≥18 years		Females ≥18 years		Below LICO ≥18 years		Above LICO ≥18 years		12-19 years (1)		20-64 years (2)		≥65 years (3)		Differences by age
	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	At least once in past 3 months (% ± 95% CI)	Avg. times per month in past 3 months	Differences by age (age group comparisons)
Bowling	6.7 ± 1.5	1.1	6.8* ± 2.3	1.2	6.7* ± 1.9	0.9	NR	NR	6.9 ± 1.8	1.1	21.2* ± 6.9	0.7	6.9 ± 1.7	1.0	NR	NR	(1,2)
Downhill skiing or snowboarding	5.9 ± 1.5	1.4	6.8* ± 2.4	1.3	5.1* ± 1.9	1.5	NR	NR	6.7 ± 1.8	1.2	16.4* ± 6.6	1.0	6.8 ± 1.8	1.4	NR	NR	(1,2)
Basketball	5.5* ± 1.9	2.8	7.2* ± 2.9	2.9	3.9* ± 2.0‡	2.6	NR	NR	4.7* ± 1.8	2.3	37.9 ± 10.3	3.6	5.1* ± 2.0	2.8	NR	NR	(1,2)
Volleyball	5.1 ± 1.6	2.4	5.6* ± 2.4	3.0	4.6* ± 1.9	1.8	NR	NR	4.2 ± 1.3	2.0	29.8 ± 8.8	3.0	4.9* ± 1.6	2.6	NR	NR	(1,2)
Tennis	4.0 ± 1.2	3.6	5.2* ± 2.2	3.4	2.9* ± 1.1‡	3.9	NR	NR	4.1 ± 1.3	3.0	10.7* ± 4.4	2.4	4.0* ± 1.3	3.0	NR	NR	(1,2)
In-line skating or rollerblading	4.0* ± 1.4	4.4	3.7* ± 1.7	5.6	4.2* ± 2.0	3.4	NR	NR	3.7* ± 1.3	1.8	NR	NR	3.6 ± 1.1	4.2	NR	NR	
Baseball or softball	3.6* ± 1.4	2.5	4.4* ± 2.1	2.4	2.9* ± 1.7	2.5	NR	NR	3.4* ± 1.2	1.0	14.0* ± 7.0	1.7	3.5* ± 1.4	2.6	NR	NR	(1,2)

Data source: Canadian Community Health Survey (2009/2010). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability. NR – Data are not reportable. NA – Not applicable, ‡ denotes a significant difference from the reference category (reference categories are males, below LICO), LICO – low income cut-off.

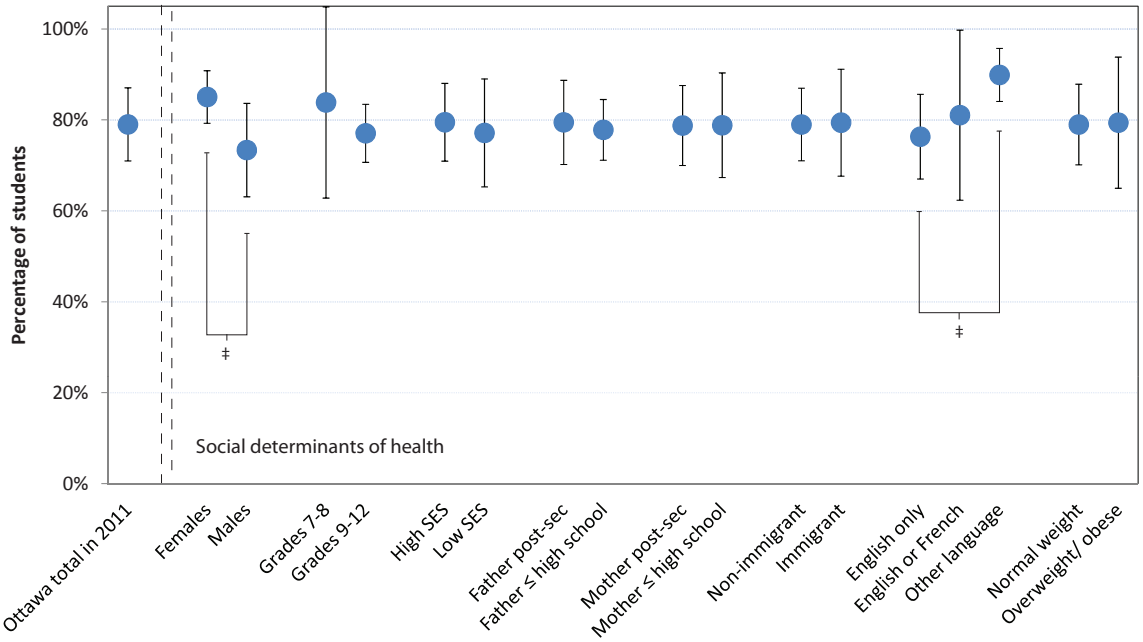
Table 23. Motorized and active transportation rates among students (grades 7 to 12) by social determinants of health, Ottawa, 2011

	Transportation to school in 2011 (Grades 7 to 12)	Transportation home from school in 2011 (Grades 7 to 12)
Ottawa students	The majority (79.0% (71.0%, 85.3%)) of students in Ottawa report using **motorized** transport to get to school. Only 20.4%* (14.3%, 28.3%) of students report using **active** forms of transportation to get to school.	The majority (71.2% (61.4%, 79.3%)) of students in Ottawa report using **motorized** transport to go home from school. Fewer students report using **active** modes of transportation home from school (28.2% (20.2%, 37.9%)).
Social Determinants of Health		
Sex	Females were more likely than males to report using **motorized** transport to school (85.1% (79.3%, 89.4%) vs. 73.4% (63.1%, 81.6%)). The reverse is also true where males were more likely than females to report using **active** modes of transportation to school (25.6%* (17.5%, 35.8%) vs. 14.9%* (10.5%, 20.7%)).	Females were more likely than males to report using **motorized** transport to return home (77.6% (68.5%, 84.6%) vs. 65.2% (54.2%, 74.8%)). The reverse is also true where males were more likely than females to report using **active** modes of transportation home (33.7% (24.4%, 44.6%) vs. 22.4%* (15.3%, 31.5%)).
Grades	No differences in mode of transportation to school were observed between students in grades 7-8 compared to grades 9-12.	Similarly, no differences in mode of transportation home from school were observed between students in grades 7-8 compared to grades 9-12.
Family SES	No differences in mode of transportation to school were observed between high and low SES students.	Similarly, no differences in mode of transportation home from school were observed between high and low SES students.
Father's education	No differences in mode of transportation to school were observed by paternal education level.	Similarly, no differences in mode of transportation home from school were observed for paternal education level.

	Transportation to school in 2011 (Grades 7 to 12)	Transportation home from school in 2011 (Grades 7 to 12)
Mother's education	No differences in mode of transportation to school were observed by maternal education level.	Similarly, no differences in mode of transportation home from school were observed for maternal education level.
Immigration status	No differences in mode of transportation to school were observed by immigration status.	Similarly, no differences in mode of transportation home from school were observed by immigration status.
Language spoken at home	Students who report speaking a language other than English or French at home were more likely to report using **motorized** transport than students who report speaking only English in the home (89.9% (84.1%, 93.8%) vs. 76.3% (67.0%, 83.7%)). The opposite was also true where students who report speaking only English at home were more likely to report using **active** transportation to school than students who spoke a language other than English or French at home (23.2%* (16.1%, 32.4%) vs. 8.9%* (5.3%, 14.7%)).	Compared to students who reported speaking a language other than English and French, there is some indication that students who reported speaking only English at home were more likely to report using **active** transportation to school; however, this difference was not statistically significant (30.5%* (21.1%, 41.8%) vs. 18.8%* (12.9%, 26.6%)).
Body mass index	No differences in mode of transportation to school were observed between BMI categories.	Similarly, no differences in mode of transportation home from school were observed between BMI categories.

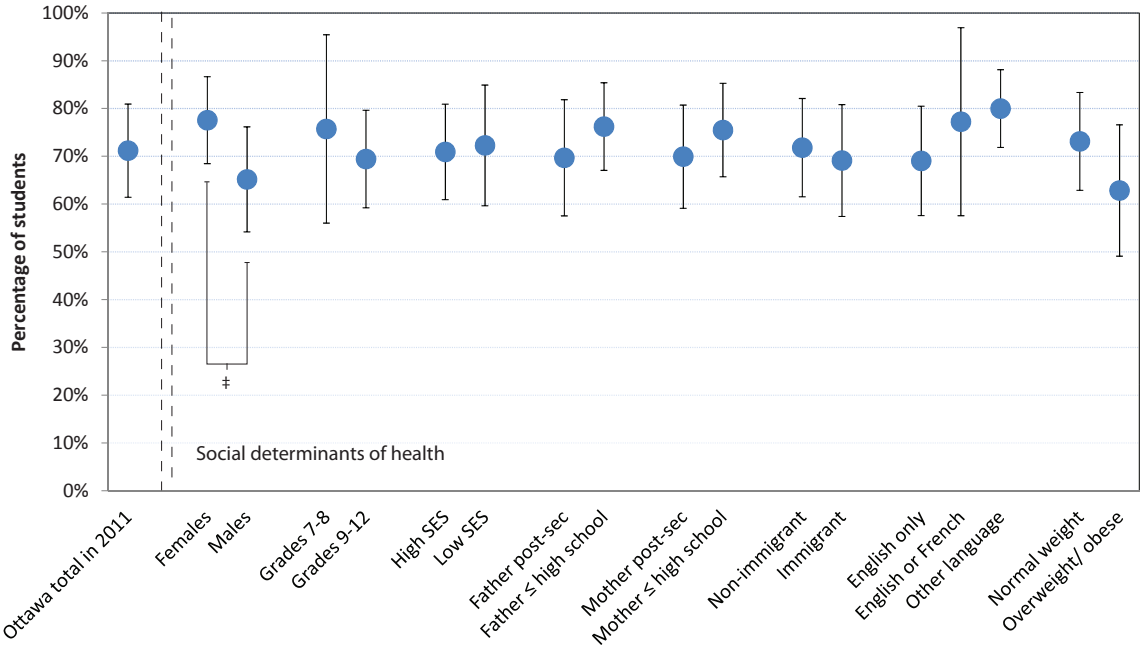
*=Interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.

Figure 19. Percentage of students in grades 7 to 12 who reported usually using motorized transportation to get to school by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2011), Centre for Addictions and Mental Health.
‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals.
Post-sec. – post-secondary, SES – socio-economic status.

Figure 20. Percentage of students in grades 7 to 12 who report having usually used motorized transportation to return home from school by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2011), Centre for Addictions and Mental Health. ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Post-sec. – post-secondary, SES – socio-economic status.

Primary Mode of Transportation to Work

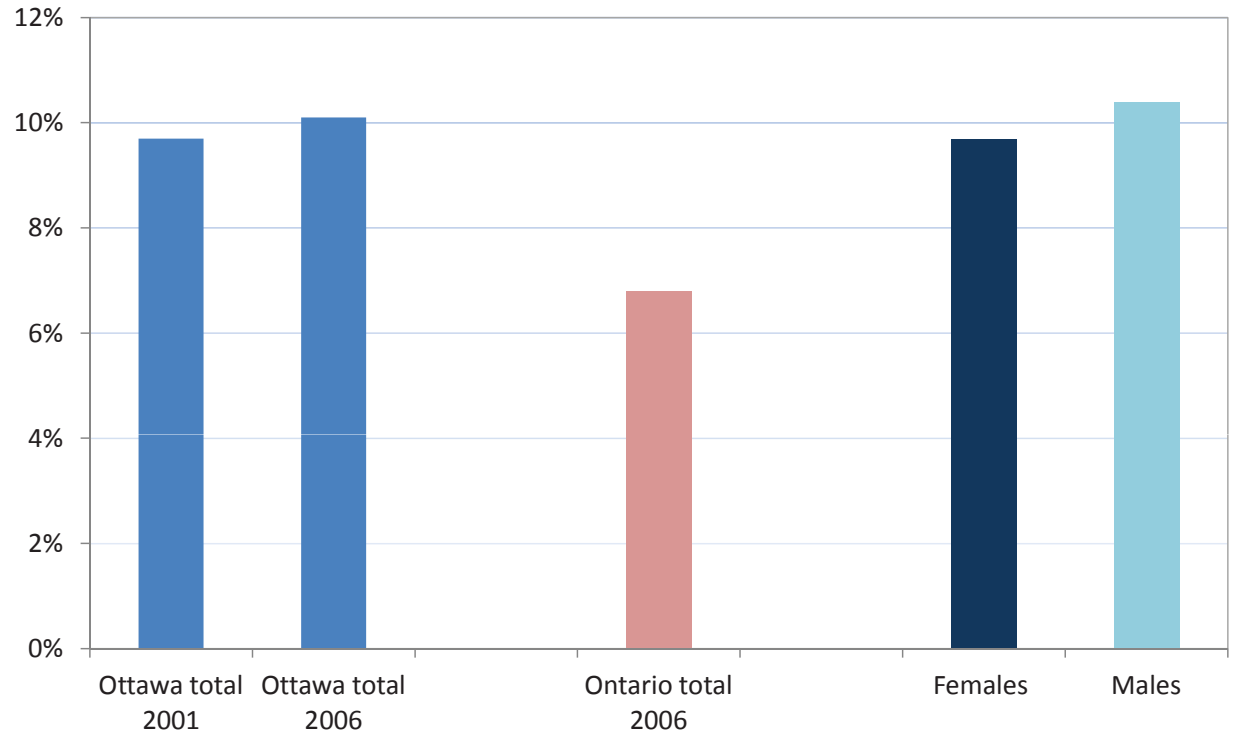
Active transportation refers to human-powered modes of transportation including walking, bicycling, rollerblading or skateboarding.[59] The Canadian Census collects data on the primary mode of transportation to work among residents aged 15 years and older.

Table 24. Primary mode of transportation to work among residents (≥15 years) by social determinants of health, Ottawa, 2001 – 2006

	Primary mode of transportation to work in 2006 (aged ≥15 years)	Historical patterns in primary mode of transportation to work (2001)
Ottawa total	10.1% of working residents (aged ≥15 years) living in Ottawa reported that their primary mode of transportation was walking or cycling.	A similar proportion of working adults living in Ottawa reported that their primary mode of transportation was walking or cycling in 2001 (9.7%).
Ontario	Compared to all of Ontario, a higher proportion of Ottawa residents reported walking or cycling as their primary mode of transportation (10.1% vs. 6.8%).	A similar trend was observed in 2001. Ottawa residents were more likely to report walking or cycling as their primary mode of transportation than residents in Ontario (9.7% vs. 6.6%).
Sex	Significantly more males than females reported walking or cycling as their primary mode of transportation (10.4% vs. 9.7%).	The opposite was observed in 2001, when females were slightly more likely than males to report walking or cycling as their primary mode of transportation (females vs. males; 9.9% vs. 9.5%).

Data source: Canadian Census, 2001 and 2006.
Data note: The provincial comparator contains the Ottawa population (i.e. Ontario). This is different from the provincial comparator used otherwise throughout this report (i.e. Ontario-less-Ottawa).

Figure 21. Percentage of Ottawa residents (≥15 years) reporting walking or cycling as their primary mode of transportation, 2001 and 2006.



Data source: Canadian census data 2001 and 2006.
Data note: The provincial comparator contains the Ottawa population (i.e. Ontario). This is different from the provincial comparator used otherwise throughout this report (i.e. Ontario-less-Ottawa).

Youth Screen Time

A recent systematic review of the relationship between sedentary behaviour and health indicators in children and youth reported that increased television viewing (>2 hours per day) is associated with "unfavourable measures of body composition, decreased fitness, lowered scores for self-esteem and pro-social behaviour and decreased academic achievement".[60] Separate and distinct from lack of MVPA (i.e. not meeting specified physical activity guidelines), sedentary behaviour is defined as any waking behaviour characterized by an energy expenditure ≤1.5 METs while in a sitting or reclining posture.[61] Sedentary behaviours, such as television viewing, do not always replace all physical activity; for example, some research suggests that sedentary behaviours may replace low intensity physical activity such as walking and playing, rather than vigorous activities such as running and sports.[62] The 2009 and 2011 OSDUHS asked students (grades 7 to 12) in the last seven days, how many hours a day, on average, did they spend watching TV/movies, playing video/computer games, on a computer chatting, emailing, or surfing the internet. Screen time was categorized using the *Canadian Sedentary Behaviour Guidelines* with those meeting guidelines (≤2 hours per day) compared to those exceeding sedentary guidelines (>2 hours per day) and those who reported being 'unsure' about their amount of screen time.

HIGHLIGHTS

- Three out of five (59%) students in grades 7 to 12 exceeded current *Canadian Sedentary Behaviour Guidelines* (>2 hours per day). Only 37% of students in grades 7 to 12 reported meeting current Guidelines with two hours or less of screen time daily.
- There was some indication that students in grades 9 to 12 may be more likely to exceed guidelines (>2 hours per day) than students in grades 7 and 8.
- Grade 7 to 12 students who reported speaking a language other than English or French at home were more likely to report more than two hours of screen time per day than students who reported speaking English only or English or French only in the home.
- Students who were more active were more likely to meet screen time guidelines of two hours or less per day.
- There was some indication that female students and those who reported their mothers had some post-secondary education were more likely to report ≤2 hours of screen time than males and students whose mothers had a high school education or less; however, additional data are needed to confirm whether this difference truly exists.
- No significant differences in screen time were observed by family SES, paternal education, immigration status, or BMI category.

Table 25. Screen time viewing rates among students (grades 7 to 12) by social determinants of health, Ottawa, 2009 – 2011

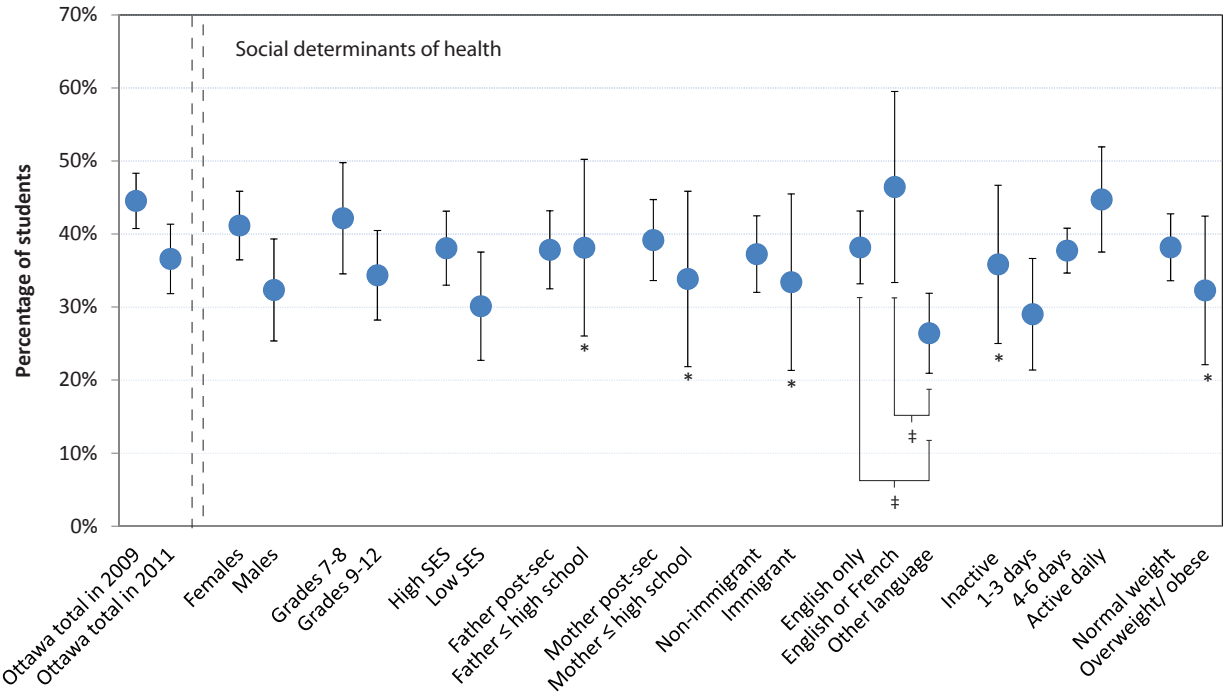
	Screen time in 2011 (Grades 7 to 12)	Historical patterns in screen time (2009 vs. 2011)
Ottawa students	The majority (58.8% (53.2%, 64.1%)) of students in Ottawa reported exceeding current Canadian sedentary guidelines with **>2 hours** of screen time a day. Less than half (36.6% (31.9%, 41.6%)) of students reported meeting guidelines with **≤2 hours** of screen time per day. A further 4.6%* (3.1%, 6.8%) reported that they were unsure as to how much screen time they were getting.	A similar pattern in screen time was seen in 2009.
Rest of Ontario	Data are not releasable for 2011 at the time of this publication.	In 2009, 40.7% (39.0%, 42.4%) of Ontario residents reported meeting screen time guidelines (**≤2 hours** per day). This was not different than the proportion seen in Ottawa (44.5% (40.8%, 48.4%)).
Social Determinants of Health (for Ottawa sample)		
Sex	No differences in the amount of screen time reported were observed between females and males.	In 2009, females were more likely than males to report **≤2 hours** of screen time; however, this difference was not statistically significant (48.8% (43.0%, 54.6%) vs. 40.6% (36.2%, 45.1%)).
Grades	Compared to students in grades 7-8, students in grades 9-12 were more likely to exceed sedentary guidelines with **>2 hours** of screen time per day, however, likely due to sample size this difference was not statistically significant (62.0% (54.7%, 68.9%) vs. 50.6% (44.7%, 56.6%)).	A similar pattern in screen time by grade was seen in 2009, where students in grades 9-12 were more likely to exceed sedentary guidelines with **>2 hours** of screen time per day compared to those in grades 7-8 (59.1% (54.2%, 63.9%) vs. 34.6% (28.1%, 41.7%)). Conversely, students in grades 7-8 were more likely than students in grades 9-12 to report **≤2 hours** of screen time per day (58.3% (50.6%, 65.6%) vs. 38.8% (34.6%, 43.2%)).
Family SES	No differences in screen time were seen between by family SES.	Family SES was not available in 2009.

	Screen time in 2011 (Grades 7 to 12)	Historical patterns in screen time (2009 vs. 2011)
Father's education	No differences in screen time were observed by paternal education level.	Similarly, no significant differences in screen time by paternal education level were seen in 2009.
Mother's education	No differences in screen time were observed by maternal education level.	In 2009, students who reported their mothers had some post-secondary education were more likely to report **≤2 hours** of screen time than students whose mothers had high school or less; however, this difference was not significant (47.0% (43.1%, 51.0%) vs. 36.1% (28.1%, 44.9%)).
Immigration status	No differences in screen time were observed by immigration status.	Similarly, no significant differences in screen time by immigration status were seen in 2009.
Language spoken at home	Students who reported speaking English only (38.2% (33.2%, 43.4%)) or English/French (46.4% (33.4%, 66.0%)) at home were more likely to report **≤2 hours** of screen time than students who reported speaking a language other than English or French in the home (26.4% (20.9%, 32.7%)). The opposite was also true where students who reported speaking a language other than English or French (70.7% (62.5%, 77.6%)) at home were more likely to report **>2 hours** of screen time than those who spoke English only (56.8% (50.9%, 62.6%)) or English/French only (48.9%* (33.3%, 64.8%)).	In 2009, no significant differences in screen time based on language spoken in the home were observed.

	Screen time in 2011 (Grades 7 to 12)	Historical patterns in screen time (2009 vs. 2011)
Physical activity level	Students who were active on 1-3 days (69.7% (60.0%, 77.9%)) were more likely than those who were active on 4-6 days (57.0% (53.1%, 60.8%)) and on a daily basis (47.6% (43.2%, 52.2%)) to report **>2 hours** of screen time. Students who were active on a daily basis were more likely to report ≤**2 hours** of screen time than students who were active on 1-3 days; however, this difference was not significant (44.7% (37.5%, 52.2%) vs. 29.0% (21.4%, 38.1%)). Students who were active 4-6 days were more likely to report ≤**2 hours** of screen time than those who were active on 1-3 days; however, this difference was not significant.	In 2009, a trend existed whereby students who were more active were more likely to report meeting guidelines of 2 hours or less of screen time. Students who were active on 4 to 6 days were more likely to report ≤**2 hours** of screen time than students who were active on 1-3 days (51.2% (44.6%, 57.8%) vs. 33.5% (27.5%, 40.1%)). Students who were active on a daily basis were more likely to report ≤**2 hours** of screen time than students who were active on 1-3 days; however, this difference was not significant (52.0% (42.8%, 61.0%) vs. 33.5% (27.5%, 40.1%)). Students who were active on 1-3 days (62.8% (55.8%, 69.3%)) were more likely than those who were active on 4-6 days (47.2% (40.4%, 54.2%)) and on a daily basis (44.0% (35.9%, 52.3%)) to report **>2 hours** of screen time; however, the difference with those who are active on a daily basis did not reach statistical significance after adjustment.
Body mass index	No differences in screen time were observed for BMI category.	Similarly, no significant differences in screen time by BMI category were seen in 2009.

***=Interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.**

Figure 22. Percentage of students in grades 7 to 12 who reported two hours or less of screen time per day by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Post-sec. – post-secondary, SES – socio-economic status.

Adult Leisure Screen Time

Prolonged amounts of television viewing among adults have been associated with obesity, diabetes, cardiovascular disease, other metabolic health conditions and all-cause mortality.[63-69]

The CCHS asks respondents about the number of hours in a typical week over the past three months they spent watching television (including videos) and using a computer (including playing computer games and using the Internet) during leisure time hours and excluding time spent on these activities at work or school. Video game use was not asked of adults aged 20 years and older. These questions do not take into account the amount of overall leisure time that respondents have available to them (e.g. retired individuals may have comparatively more leisure time than working individuals) and thus relative amounts of leisure time spent watching television or using the computer are not available.

Guidelines for screen time or the amount of time spent on sedentary activities have not been proposed for adults in Canada. In the literature, a variety of cut-points have been used to define frequency of adult television viewing and computer use including 15 or more hours for television viewing and 11 or more hours on computer use per week.[70, 71] These cut-points also align with the *Canadian Sedentary Behaviour Guidelines for Children and Youth* of less than two hours of sedentary activity per day.[72] Overall leisure screen time combining television viewing and computer use is presented.

HIGHLIGHTS

- Nearly half (48%) of Ottawa adults (aged ≥20 years) spent 15 hours or more per week watching television or using the computer outside of work or school; however this proportion is down from 2003 (53%).
- Males were more likely to spend 15 or more hours on screen time than females.
- There was some indication that adults with less than a high school education and those who were underweight and normal weight were less likely to report ≥15 hours of screen time than those with a high school education or higher and who were overweight or obese; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences in the proportion of adults spending 15 or more hours a week on screen time were seen by household income, mother tongue language, or immigration status

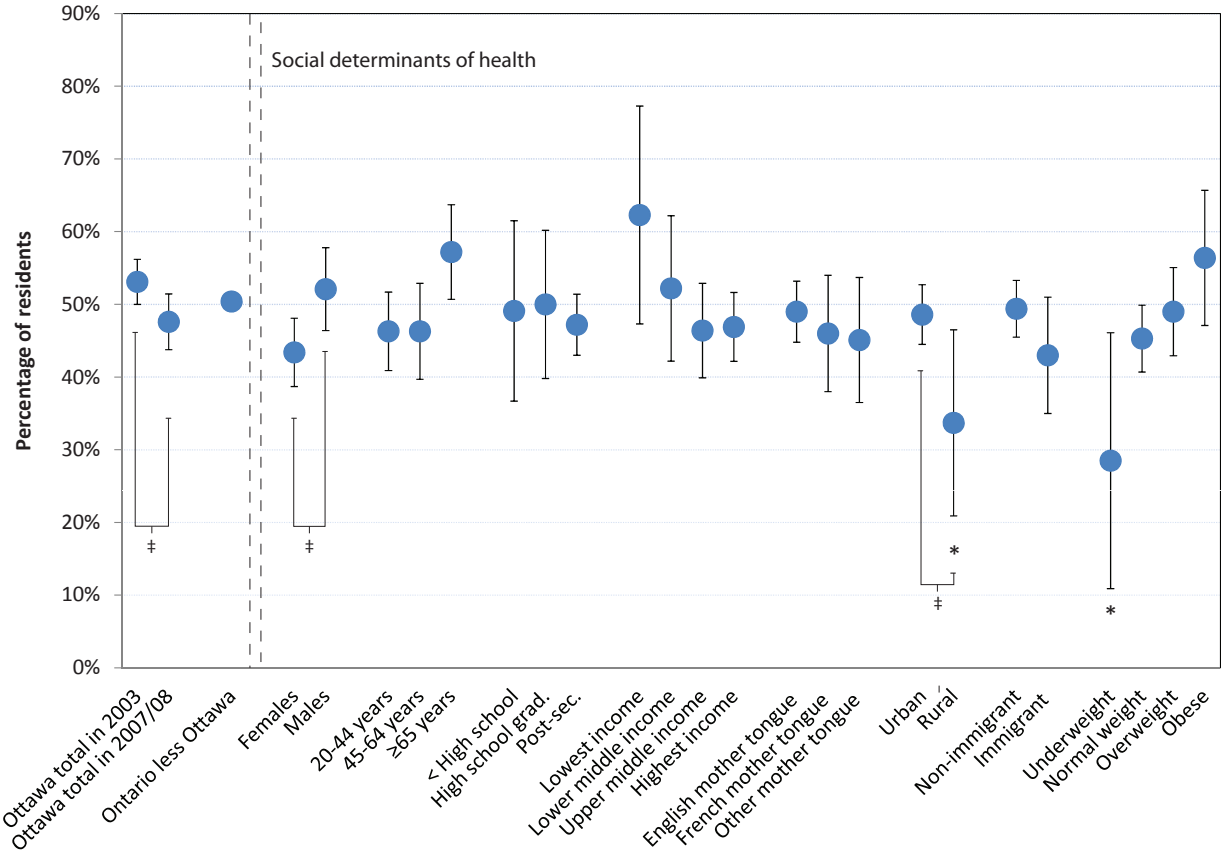
Table 26. Leisure screen time among adults (≥20 years) by social determinants of health, Ottawa, 2003 – 2007/08.

	Leisure screen time in 2007/08 (youth 12 to 19 years and adults ≥20 years)	Historical patterns in leisure screen time (2003 – 2007/08)
Total sample	Nearly half of Ottawa adults spent **≥15 hours** per week (296,400 or 47.6% (43.7%, 51.4%)) and 52.4% (48.6%, 52.3%) of adults spent 14 or fewer hours watching television or using the computer in their leisure time.	In 2003, more Ottawa adults spent **≥15 hours** per week (53.1% (50.0%, 56.2%)) watching television or using the computer in their leisure time
Rest of Ontario	Ottawa adults were not different from the rest of Ontario in total time spent on television and computer use.	In 2003, there were no differences in total time spent on leisure time television and computer use between Ottawa adults and the rest of Ontario.
Social Determinants of Health (for Ottawa sample)		
Sex	Males (52.1% (46.3%, 57.8%)) were more likely than females (43.4% (38.7%, 48.1%)) to spend **≥15 hours** per week on leisure time television viewing and computer use.	In 2003, a similar difference in leisure time television viewing and computer use was observed by sex.
Age	There is some indication that seniors were most likely to spend **≥15 hours** per week on leisure time television viewing and computer use (57.2% (50.7%, 63.7%)) compared to adults aged 20-44 years (46.3% (40.8%, 51.7%)) and those aged 45-64 years (46.3% (39.7%, 52.9%)); however this difference was not statistically significant.	In 2003, the opposite occurred where seniors were less likely to spend **≥15 hours** per week on leisure time television viewing and computer use (43.6% (37.1%, 50.0%)) than adults aged 20-44 years (55.8% (51.5%, 60.1%)) and those aged 45-64 years (52.6% (47.1%, 58.1%)).
Education	There were no differences in overall leisure time television viewing and computer use by education level.	In 2003, there was some indication that adults with less than high school diploma were less likely to spend **≥15 hours** per week on leisure time television viewing and computer use (40.8% (30.9%, 50.7%)) than adults who graduated high school (55.9% (48.9%, 63.1%)) and those with post-secondary education (53.9% (50.2%, 57.6%)); however, this difference was not statistically significant.

	Leisure screen time in 2007/08 (youth 12 to 19 years and adults ≥20 years)	Historical patterns in leisure screen time (2003 – 2007/08)
Household income	There were no differences in overall leisure time television viewing and computer use by household income.	Similarly, there were no differences in leisure time television viewing and computer use by household income.
Urban/rural	Adults living in urban areas of Ottawa were more likely to spend **≥15 hours** per week on leisure time television viewing and computer use (48.6% (44.4%, 52.7%)) compared to adults living in rural areas (33.7% (20.9%, 46.5%)).	In 2003, the opposite pattern occurred, where adults living in rural areas of Ottawa were more likely to spend **≥15 hours** per week on leisure time television viewing and computer use (61.9% (53.9%, 69.9%)) compared to adults living in urban areas (52.1% (48.7%, 55.4%)).
Mother tongue language	There were no differences in overall leisure time television viewing and computer use by mother tongue language.	There were no differences in overall leisure time television viewing and computer use by mother tongue language in 2003.
Immigration	No differences were observed in the overall amount of time spent viewing television and computer use in leisure time between immigrant and non-immigrant.	Similarly, no differences were observed in overall television viewing and computer use between immigrants and non-immigrants.
Body mass index	There is some indication of a linear relationship between spending **≥15 hours** per week on leisure time television viewing and computer use and an increase in BMI category; however this pattern is not statistically significant. 28.5%*(10.9%, 46.1%) of underweight adults, 45.3% (40.6%, 49.9%) of normal weight adults, 49.0% (43.0%, 55.1%)) of overweight adults, and 56.4% (47.1%, 65.7%) of obese adults spent **≥15 hours** per week on leisure time television viewing and computer use.	In 2003, the linear relationship was not apparent and there were no differences between overall time spent viewing television and computer use and BMI category.

*=Interpret with caution due to high sampling variability. BMI – body mass index.

Figure 23. Percentage of adults (≥20 years) who spend 15 or more hours of television viewing or computer use during leisure time by social determinants of health, Ottawa, 2007/08.



Data source: Canadian Community Health Survey (2003, 2007/08). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability, ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad- graduate, post-sec. – post-secondary, SES – socio-economic status.

Adult Time Spent Sitting

Extensive amounts of sitting is associated with a number of adverse health effects ranging from increased risk of all cause mortality, cardiovascular disease, metabolic syndrome, weight gain, as well as some types of cancer.[73] Furthermore, there is some evidence suggesting that the adverse association of sedentary behaviours such as sitting with health risks may be independent of the protective effects of physical activity.[74]

The short form of the IPAQ used in the RRFSS includes a question on sitting. The question specifically asks about sitting on a "weekday", which has been chosen to reflect usual behaviour for the short IPAQ instrument as a result of the IPAQ validation process. Similar to the IPAQ, the sitting question is prefaced by asking the respondents to consider multiple life domains for the period of sitting being recalled.

Currently there are no known defined sitting thresholds for health purposes among adults. However, given the expanding evidence of the negative consequences of sitting combined with the considerable amount of sitting found in a population study of 20 diverse countries[73], sitting time is becoming an important indicator for public health surveillance and intervention.

Recent research in sedentary behaviour found evidence to suggest that sitting for several consecutive hours has a negative and demonstrable impact on metabolic health. Simple measures such as a short walk break could substantially reduce the impact of prolonged sitting.[75,76]

HIGHLIGHTS

- Ottawa adults (aged ≥18 years) spent an average of 5.9 hours per weekday sitting or approximately 37% of their waking hours.
- On a typical weekday, males spent more hours sitting than females.
- Middle age adults (25 to 44 years and 45 to 64 years) spent more hours sitting than seniors. The 25 to 44 year olds reported the highest sitting time.
- Adults with higher education levels and those with higher incomes spent more time sitting than those with less education or income.
- Adults who are physically active spent less time sitting.
- There was some indication that young adults (18 to 24 years) spent more time sitting than seniors; however, additional data are needed to confirm whether this difference truly exists.
- No significant differences in sitting time were observed by mother tongue language or BMI category.

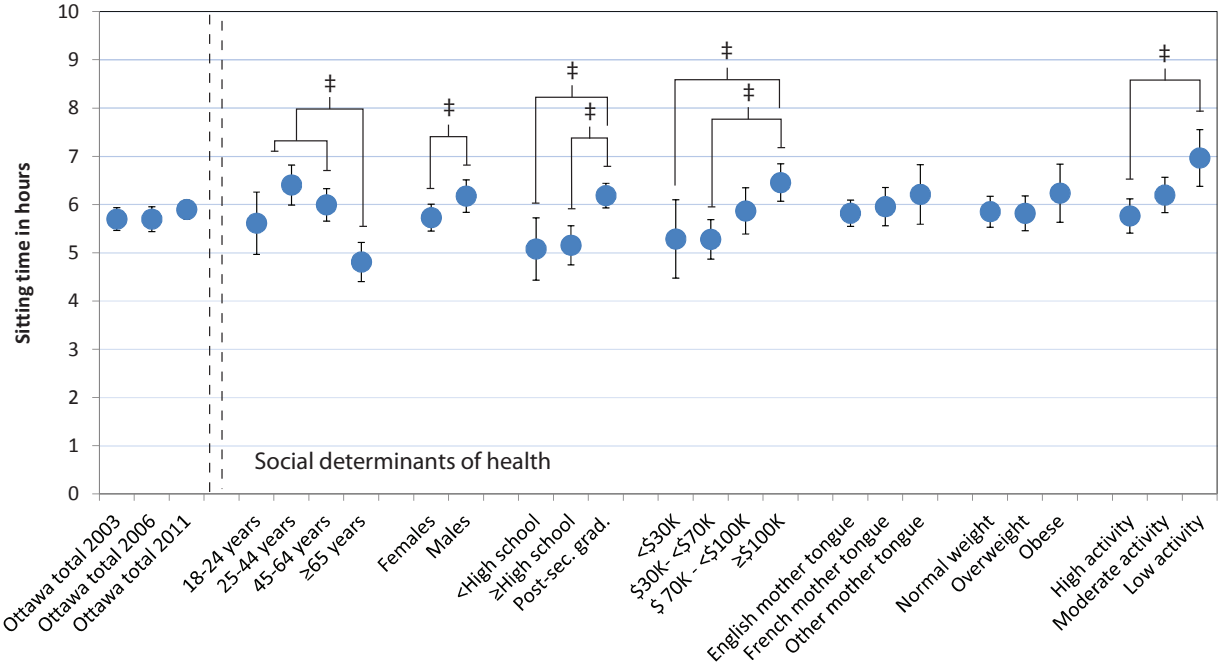
Table 27. Weekday sitting hours among adults (≥18 years) by social determinants of health, Ottawa, 2003 – 2011.

	Adult weekday sitting hours in 2011 (aged ≥18 years)	Historical patterns in sitting hours (2003 – 2009)
Total sample	Overall, Ottawa adults reported sitting an average of 5.9 hours/weekday (5.7, 6.1). The median was 5.8 hours/day with a range of 3-8 hours) of sitting per day.	Similar sitting hours were reported between 2003-2009
Social Determinants of Health		
Sex	Males reported more sitting time than females (6.2 hours/weekday for males (5.8, 6.5), 5.7 hours/ weekday for females (5.5, 6.0)).	Similar patterns in sitting time among males and females were seen between 2003-2009
Age	Adults in the two middle age groups reported more time spent sitting on weekdays compared to seniors: 18-24 year olds sat for 5.6 hours (5.0, 6.3), the 25-44 year olds sat for 6.4 hours (6.0 , 6.8), the 45-64 year olds sat for 6.0 hours (5.7, 6.3) and seniors sat for 4.8 hours (4.4, 5.2).	A similar pattern in sitting time by age was seen between 2003 and 2009.
Education	Sitting time per weekday increased with education level where post-secondary graduates (6.2 hours/weekday (5.9, 6.4) were more likely to report more sitting hours than those with lower levels of education (<high school: 5.1 hours/ weekday (4.4, 5.7), completed high school/or some post-secondary education 5.2 hours (4.8, 5.6)).	A similar pattern in sitting time by education was seen between 2003 and 2009.
Household income	Similar to education, sitting time per weekday increased with income level with those earning >$100K per year (6.5 hours/ weekday (6.1, 6.8)) reporting more hours of sitting/weekday than those who earned <$30K (5.3 hours (4.5, 6.1)) or between $30-70K per year (5.3 hours (4.9, 5.7)).	A similar pattern in sitting time by household income was seen between 2003 and 2009

	Adult weekday sitting hours in 2011 (aged ≥18 years)	Historical patterns in sitting hours (2003 – 2009)
Mother tongue language	No differences in the average number of sitting hours/weekday were observed by mother tongue language.	There were no differences in the average number of sitting hours/ weekday by mother tongue language between 2003 and 2009.
Physical activity level	Those who were physically active spent less time sitting. Adults who reported high levels of physical activity sat for 5.8 hours/ weekday (5.4, 6.1), compared to 6.2 hours (5.8, 6.6) among moderately active people and 7.0 hours (6.4, 7.6) among those with low levels of activity.	A similar pattern in sitting time by physical activity level was seen between 2003 and 2009.
Body mass index	No differences in the average number of sitting hours/weekday were observed by BMI category.	There were no differences in the average number of sitting hours/ weekday by BMI category between 2003 and 2009.

*=interpret with caution due to small sample size. BMI – body mass index, K – thousand.

Figure 25. Average hours spent sitting per weekday among adults (≥18 years) by social determinants of health, Ottawa, 2011.



Data source: Rapid Risk Factor Surveillance System, 2003, 2006, 2011.
‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.
Grad – graduate, K – thousand, post-sec. – post-secondary.

Pedometer Awareness and Use

Pedometers, which are simple devices worn to count the number of steps taken, were promoted through Ottawa's physical activity strategy as a tool to help gauge the 10,000 steps-per-day target.

In 2004, Tudor-Locke and Bassett proposed an index to translate existing physical activity guidelines into a steps-per-day equivalent.[77] The steps-per-day physical activity index for healthy adults is outlined in Table 28.

A goal of 10,000 steps-per-day may help healthy adults attain health benefits. However, it may not be attainable for older adults and those living with chronic disease and is probably too low for children.[77] Public health messaging in Ottawa has focussed on the target of 10,000 or more steps a day to achieve health benefits.

Table 28. Steps per day pedometer indices for public health

Number of steps per day	Activity Classification	Description
<5,000	Sedentary	Indicates those with sedentary lifestyles
5,000 to 7,499	Low active	Typical of daily activity excluding sports and exercise and might be considered low active
7,500 to 9,999	Somewhat active	Likely includes some sports and exercise or walking and/or a job that requires more walking or activity, and might be considered somewhat active
≥10,000	Active	The point that should be used to classify adults as active
≥12,500	Highly active	Individuals are likely to be classified as highly active

This classification is for healthy adults and may not be attainable for older adults and those living with chronic disease and is probably too low for children.

The *Ottawa Adult Physical Activity Study* was conducted in 2008 in coordination with the Canadian Fitness and Lifestyle Research Institute (CFLRI) and recruited Ottawa residents 15 years of age and older to provide information on pedometer awareness and use.

HIGHLIGHTS

- Nearly nine out of ten adults (aged ≥18 years) had heard of a pedometer or step counter; of these, over one third (36%) had used or worn one.
- Residents who owned a pedometer were more likely to know that 10,000 or more steps per day is necessary for health benefits, compared to those who had not heard of pedometers.
- Over half (55%) of residents who had not heard of a pedometer thought that taking less than 5,000 steps per day would be sufficient for health benefits and a further 30% did not know how many steps were necessary, indicating lack of awareness of public health messaging.
- Females were more likely to have used, worn or owned a pedometer.
- Awareness of pedometers was greatest in the 45 to 64 year age group and those with higher incomes.
- Use and ownership did was not statistically different between age or income groups.

Table 29. Awareness and use of pedometers among adults (≥18 years) by social determinants of health, Ottawa, 2008.

	Awareness and use of pedometers among adults (aged ≥18 years) (2008)
Total sample	88.6% (87.0%, 90.2%) of residents reported hearing of a pedometer or step counter; of these, 36.4% (33.2%, 39.6%) had **used or worn** a pedometer. Over half of residents who had ever worn a pedometer reported that they owned one (58.2% (52.5%, 63.9%)). Residents who used and owned a pedometer were asked how many steps they thought someone had to take per day to achieve health benefits. Thirty five percent thought that less than 5,000 steps per day would be sufficient for health benefits, 13.2% (9.1%, 17.3%) said 5,000 to 9,999 steps per day, and 45.9%* (39.9%, 51.9%) recognized the 10,000 steps per day target. Of those residents who had not heard of a pedometer, 55.4% (44.1%, 66.7%) thought that taking <5,000 steps per day would be sufficient for health benefits and 29.7%* (19.3%, 40.1%) did not know how many steps were necessary.
Rest of Ontario	Provincial data for pedometer use were not collected.
Social Determinants of Health (Awareness, Use and Ownership of a Pedometer only)	
Sex	**Awareness** of pedometers was similar among males and females. Females (41.5% (37.0%, 46.0%)) were more likely than males (30.1% (25.5%, 34.7%)) to have ever **used or worn** a pedometer. In addition, females were more likely to have **owned** a pedometer (females: 62.9% (56.0%, 69.8%); males: 50% (40.3%, 59.7%)).
Age	**Awareness** of pedometers was highest among those aged 45 to 64 years of age (91.7% (89.3%, 94.1%)). Age was not found to be associated with use and ownership of a pedometer.
Household income	**Awareness** of pedometers rose with increasing household income. Household income was not found to be associated with **use** or **ownership** of a pedometer.

Data source: Ottawa Adult Physical Activity Survey, Canadian Fitness & Lifestyle Research Institute, 2008.
*=Interpret with caution due to high sampling variability.

Objectively Measured Physical Activity in Adults

In 2008, a pedometer study was conducted on a sample of 164 Ottawa residents (aged ≥15 years) recruited from the *Ottawa Adult Physical Activity Study*. Its purpose was to measure steps per day to determine whether there is any change in activity levels when adults wear pedometers. Although these results cannot be generalized to the Ottawa population, they give some indication of measured physical activity levels in a small sample of Ottawa adults, which had not previously been done.

HIGHLIGHTS

- A small sample of Ottawa residents (aged ≥15 years) found that approximately 30% averaged 10,000 or more steps per day – Ottawa's promoted target for health benefits.

Table 30. Steps per day among residents (≥15 years) by social determinants of health, Ottawa, 2008.

	Steps per day in 2008 (aged ≥15 years)
Total sample	Over a two-week period in 2008, the average number of steps per day for the sampled adults was 8,549 (95% CI: 8,140 to 8,959 steps per day; median: 8,537 steps per day; range: 2,016 to 14,690 steps per day). Approximately 30% of the adults sampled averaged 10,000 or more steps per day, Ottawa's promoted target for health benefits.
Rest of Ontario	Provincial data was not collected in the pedometer study.
Age	Adults aged 25 to 44 years averaged 8,487 steps per day (95% CI: 7,834 to 9,140 steps per day; range: 2,906 steps per day to 14,690 steps per day). Adults aged 45 to 64 years averaged 8,636 steps per day (95% CI: 8,077 steps per day to 9,196 steps per day; range: 2,017 to 14,342 steps per day). Data for adults aged 15 to 24 years and seniors were not reportable due to small sample size.

Data source: Ottawa Adult Physical Activity Survey, Canadian Fitness & Lifestyle Research Institute, 2008.

Barriers and Enablers to Physical Activity

In 2002 and 2008, the *Ottawa Adult Physical Activity Survey* asked Ottawa residents (aged ≥15 years) how important individual-level, service-level and infrastructure-level barriers were in preventing them from participating in regular physical activity. It is important to know which barriers prevent Ottawa residents from physical activity to design appropriate interventions.[59]

Individual-Level Barriers to Physical Activity

Individual-level barriers can affect an individual's confidence and ability to participate in regular physical activity, these barriers include things such as a lack of physical skills, time, energy, motivation, access to physical activity programs, coaching, or information.[59]

HIGHLIGHTS

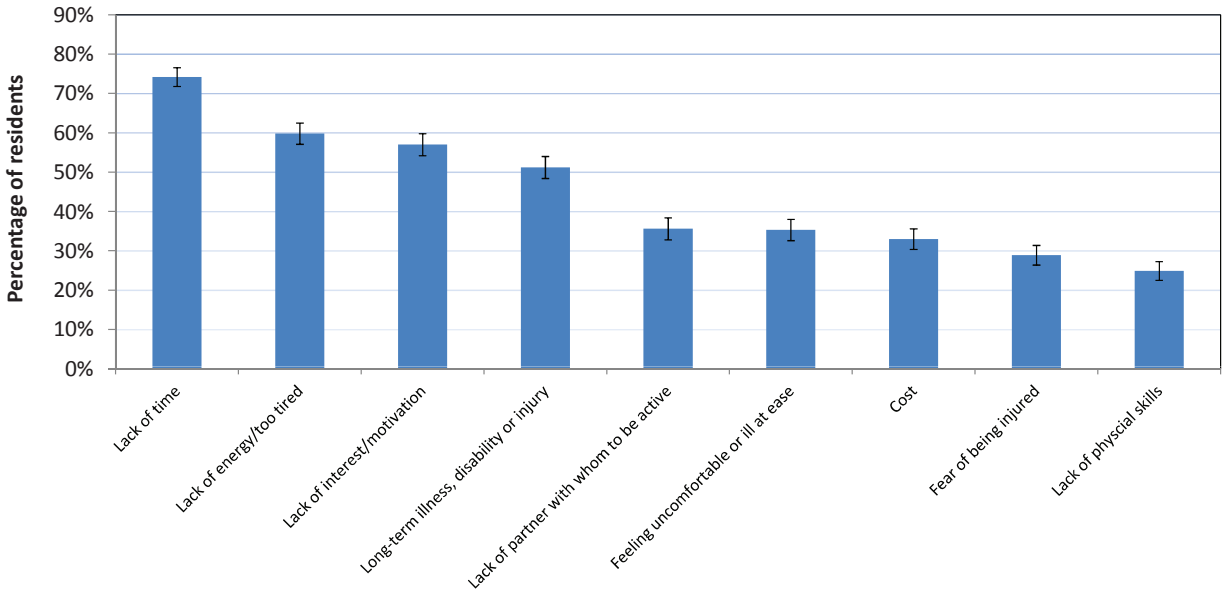
- The top three individual-level barriers to physical activity were lack of time, lack of energy, and lack of interest/motivation.
- Lower income was associated with a higher prevalence of individual-level barriers.
- High physical activity levels were associated with lower prevalence of individual-level barriers.

Table 31. Individual-level barriers among residents (≥15 years) by social determinants of health, Ottawa, 2002 – 2008.

	Individual-level barriers to physical activity in 2008	Historical patterns in individual-level barriers to physical activity (2002)
Ottawa total	The top three individual barriers to physical activity were lack of time (74.2% (71.8%, 76.6%)), lack of energy (59.8% (57.1%, 62.5%)) and lack of interest/motivation (57.0% (54.2%, 59.8%)). Cost (33.0% (30.4%, 35.6%)), fear of being injured (28.9% (26.4%, 31.4%)), and lack of physical skills (24.9% (22.5%, 27.3%)) were those least likely to be reported as important in 2008.	Declines were observed between 2002 and 2008 in the proportion of residents who reported lack of energy/too tired (64.2% (61.0%, 67.4%) vs. 59.8% (57.1%, 62.5%)), lack of interest/motivation (63.2% (60.0%, 66.4%) vs. 57.0% (54.2%, 59.8%)), cost (39% (35.8%, 42.2%) vs. 33% (30.4%, 35.6%)) and lack of physical skills (32.7% (29.6%, 35.8%) vs. 24.9% (22.5%, 27.3%)). No other differences were observed between 2002 and 2008.
Social Determinants of Health (2008)		
Age	A higher proportion of adults aged 15-24 years reported lack of interest/motivation (71.0% (64.3%, 77.7%)); lack of a partner with whom to be active (46.3% (38.9%, 53.7%); and feeling uncomfortable or ill at ease (49.4% (42.0%, 56.8%)) as important barriers, compared to other age groups. Seniors reported lack of energy (58.2% (50.2%, 66.2%)); lack of interest/motivation (57.3% (49.2%, 65.4%)); and long-term illness/disability/injury (54.8% (46.4%, 63.2%)).	
Sex	More females than males reported lack of energy/too tired (63.7%; (60.0%, 67.4%) vs. 55.2% (51.1%, 59.3%)), feeling uncomfortable or ill at ease (39.1% (35.4%, 42.8%) vs. 30.7% (26.9%, 34.5%)), and cost (38.1% (34.4%, 41.8%) vs. 26.9% (23.2%, 30.6%)) as important.	
Household income	Generally, lower income (<$30K) was associated with a higher prevalence of individual-level barriers. Long-term illness, disability or injury was the most common barrier reported as important by low-income residents (<$30K) (71.4% (62.5%, 80.3%)), while lack of interest or motivation was the most common barrier reported as important by high-income residents (≥$90K) (49.4% (44.9%, 58.4%)). For more information, refer to AOA Evaluation Report, Appendix D, Table 3.4.[59]	
Physical activity level¥	Generally, those adults who are highly active reported lower prevalence of barriers. Lack of time was the most common barrier reported as important by highly active residents (72.5% (69.1%, 75.9%)). For more information, refer to AOA Evaluation Report, Appendix D, Table 3.5.[59]	

¥All-domain physical activity was measured using the IPAQ. K – thousand.

Figure 26. Important individual-level barriers to physical activity among residents (≥15 years), Ottawa, 2008.



Data source: Ottawa Adult Physical Activity Survey, Canadian Fitness & Lifestyle Research Institute, 2008.
Vertical bars represent 95% confidence intervals.

Service-Level Barriers to Physical Activity

Supportive services and infrastructure can play an important role in helping people to be physically active.[59] Service-level barriers include access to physical activity programs, coaching, or information.

HIGHLIGHTS

- Ottawa residents (aged ≥15 years) reported that affordable facilities, services and programs was the most common service-level barrier to their being active.
- Generally, lower income was associated with a higher prevalence of service-level barriers.

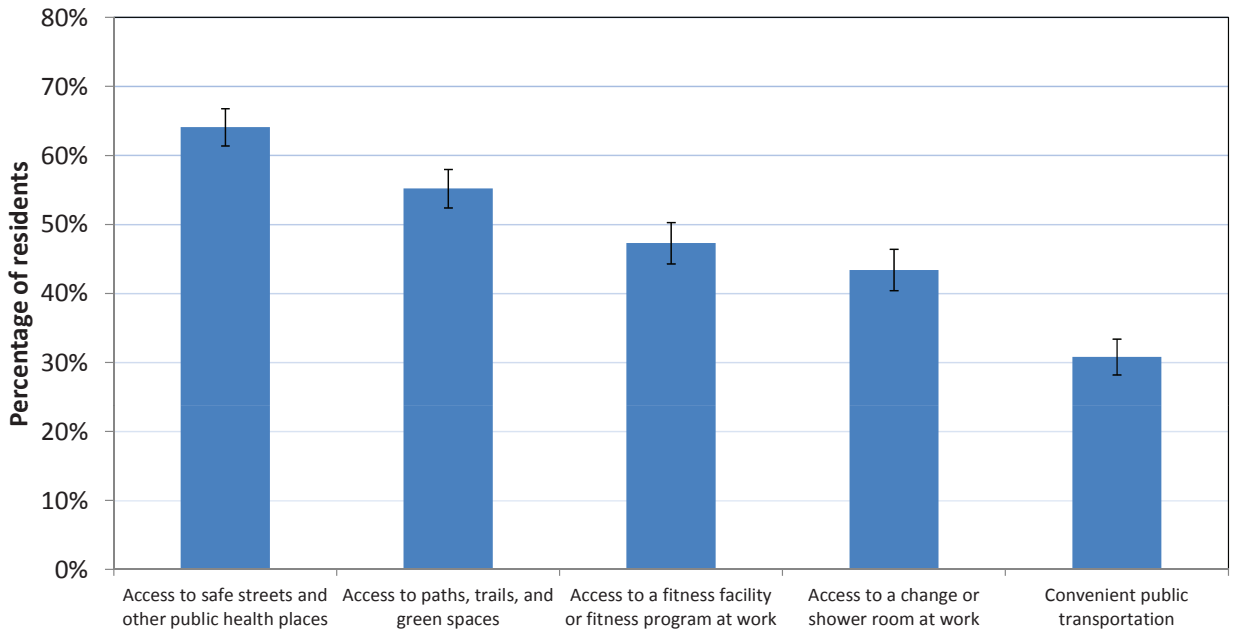
Table 32. Service-level barriers among residents (≥15 years) by social determinants of health, Ottawa, 2002 – 2008.

	Service-level barriers to physical activity in 2008	Historical patterns in service-level barriers to physical activity (2002 vs. 2008)
Ottawa total	The three most common barriers reported as important by Ottawa adults included: affordable facilities, services and programs (55.0% (52.2%, 57.8%); information of physical activity and well-being (43.4% (40.6%, 46.2%)); and help in planning a daily schedule (39.4% (36.7%, 42.1%)).	Fewer adults reported affordable support services such as child care and parking (37.7% (35%, 40.4%) vs. 43.3% (40.0%, 46.6%)) and affordable services to link a person with others to be active with (26.0% (23.6%, 28.4%) vs. 29.6% (26.6%, 32.6%)) in 2008 than in 2002. More adults reported information on physical activity, health and well-being as important in 2008 than in 2002 (43.4%, (40.6%, 46.2%) vs. 41.4% (38.1%, 44.7%)). No other differences in the importance of proportion of service-level barriers between 2002 and 2008.
Social Determinants of Health (2008 only)		
Age	Youth aged 15-24 years and seniors were more likely than other age groups to state access to information on physical activity, health, and well-being as service-level barriers to physical activity (15-24 years: 51.7% (44.3%, 59.1%); seniors: 49.3% (41.3%, 57.3%)). Youth were also more likely to state help in planning a daily schedule as an important barrier (52.6% (45.2%, 60.0%)). Adults aged 25-44 years were more likely to state access to affordable services such as child care and parking as barriers to physical activity (48.9% (43.8%, 54.0%)). Seniors were more likely to state affordable services to link them up with other people with whom to participate as a barrier to physical activity (34.7% (27.0%, 42.4%)).	
Sex	More females than males reported affordable facilities, services and programs (59.8% (56.1%, 63.6%) vs. 49.4% (45.3%, 53.5%)); `affordable support services such as child care and parking (44.5% (40.2%, 48.3%) vs. 29.7% (25.9%, 33.5%)); professional help in choosing the best types of activities (37.9% (34.2%, 41.6%) vs. 31.3% (27.5%, 35.1%)); specific instruction or coaching (34% (30.4%, 37.6%) vs. 21.4% (19.6%, 26.6%)); and affordable services to link you up with other people to participate with (28.4% (25.0%, 31.8%) vs. 23.1% (19.6%, 26.6%)), as important barriers.	

	Service-level barriers to physical activity in 2008	Historical patterns in service-level barriers to physical activity (2002 vs. 2008)
Income	Generally, lower income (<$30K) was associated with a higher prevalence of service-level barriers. The most frequently reported barrier to physical activity for adults living with the lowest (<$30K) and highest household incomes (≥$90K) were affordable facilities, services and programs (63.0% (53.5%, 72.5%) and 49.7% (45.2%, 54.2%)). For more information, refer to AOA Evaluation Report, Appendix D, Table 3.9.[59]	
Physical activity levels	No differences in service-level barriers were observed by physical activity levels.	

K – thousand.

Figure 27. Important service-level barriers to physical activity among Ottawa residents (≥15 years), 2008



Data source: Ottawa Adult Physical Activity Surveys, Canadian Fitness & Lifestyle Research Institute, 2008.
Vertical bars represent 95% confidence intervals.

Infrastructure-Level Barriers to Physical Activity

Supportive services and infrastructure can play an important role in helping people to be physically active.[59] Infrastructure-level barriers include access to recreational facilities and gyms, paths and sidewalks, and parks.

HIGHLIGHTS

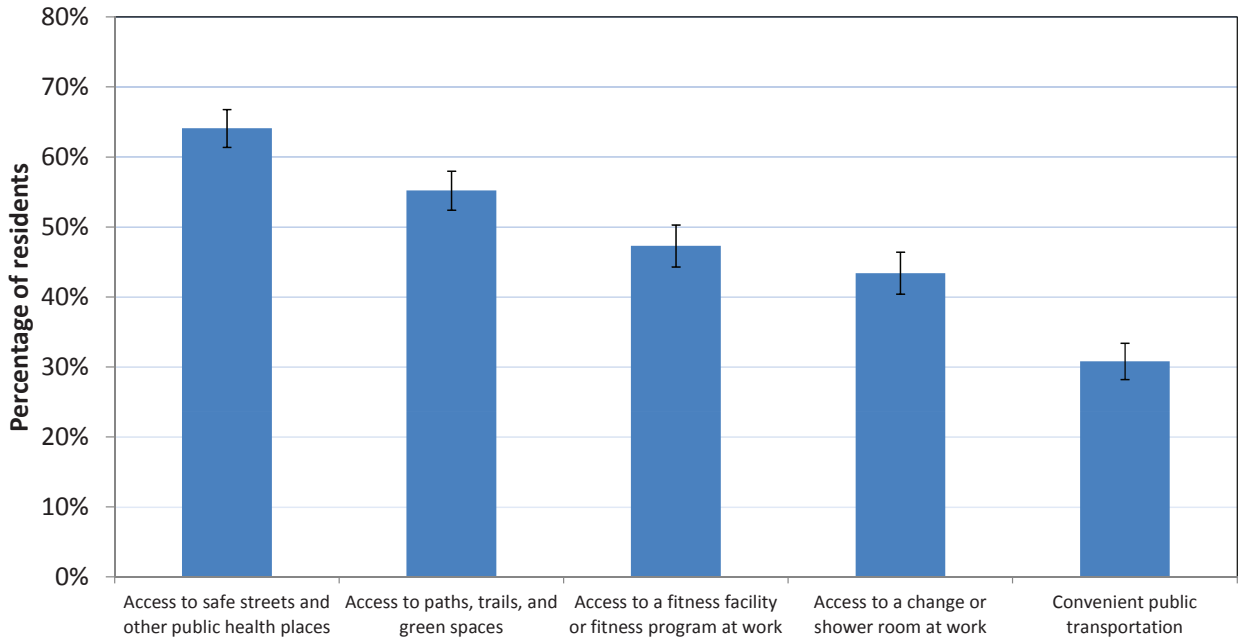
- Ottawa residents reported that access to safe streets and other public places was the most common infrastructure-level barrier to preventing them from being active.
- Youth (15 to 24 years) and seniors were most likely to cite convenient public transportation as an important infrastructure barrier to physical activity.
- Females ranked all infrastructure-level barriers as more important than males.
- Importance of convenient public transportation as a barrier to physical activity decreased with increasing income.

Table 33. Infrastructure-level barriers among residents (≥15 years) by social determinants of health, Ottawa, 2002 – 2008.

	Infrastructure-level barriers to physical activity in 2008	Historical patterns in infrastructure-level barriers to physical activity (2002 vs. 2008)
Ottawa total	The three most common infrastructure-level barriers reported to be important by Ottawa adults include: access to safe streets and other public places (64.1% (61.4%, 66.8%)); access to paths, trails and green spaces (55.2% (52.4% 58.0%)), and access to a fitness facility or fitness program at work (47.3% (44.3%, 50.3%)).	No differences in the importance of infrastructure-level barriers between 2002 and 2008
Social Determinants of Health (2008)		
Age	There were no differences by age in access to safe streets and public places. Seniors were most likely to cite that access to paths, trails and green spaces was not an important barrier. There were no differences in access to a fitness facility or fitness program at work or access to a change/shower room at work in the working age population (15-64 years). Youth (15-24 years) and seniors were most likely to cite convenient public transportation as an important barrier to physical activity (youth: 39.1% (31.8%, 46.4%); seniors: 38.6% (30.7%, 46.5%)) Refer to AOA Evaluation Report, Appendix D, Table 3.8 for more details.[59]	
Sex	Females ranked all infrastructure-level barriers as more important than males: access to safe streets and other public places (70.2% (66.7%, 73.7%) vs. 57.1% (53.0%, 61.2%)); access to paths trails and green spaces (58.4% (54.7%, 62.1%) vs. 51.3% (47.2%, 55.4%)); access to a fitness facility or fitness program at work (53.8% (49.7%, 57.9%) vs. 39.8% (35.5%, 44.1%); access to a change or shower room at work (48.1% (44.0%, 52.2%) vs. 38% (33.8%, 42.2%)); convenient public transportation (34.1% (30.5%, 37.7%) vs. 26.9% (23.2%, 30.6%).	
Income	Importance of convenient public transportation as a barrier to physical activity decreases with increasing income (<$30K (44.0% (34.3%, 53.7%); $30K to <$50K (42.2% (32.9%, 51.5%); $50K to <$90K (32.8% (27.4%, 38.4%); ≥$90K (25.1% (21.2%, 29.0%)). No other differences were observed in infrastructure-level barriers to physical activity by income.	
Physical activity level	No significant differences in infrastructure-level barriers were seen by physical activity levels.	

K – thousand.

Figure 28. Important infrastructure-level barriers among residents (≥15 years), Ottawa, 2008



Data source: Ottawa Adult Physical Activity Surveys, Canadian Fitness & Lifestyle Research Institute, 2008.
Vertical bars represent 95% confidence intervals.

Access to Physical Activity Facilities at Work

Physical activity facilities at the workplace can provide opportunities for people to by physically active. In the 2007/08 CCHS, Ottawa residents were surveyed about access to physical activity facilities such as places to walk or cycle, gyms, change rooms, organized fitness classes or recreational sports teams at their workplaces.

HIGHLIGHTS

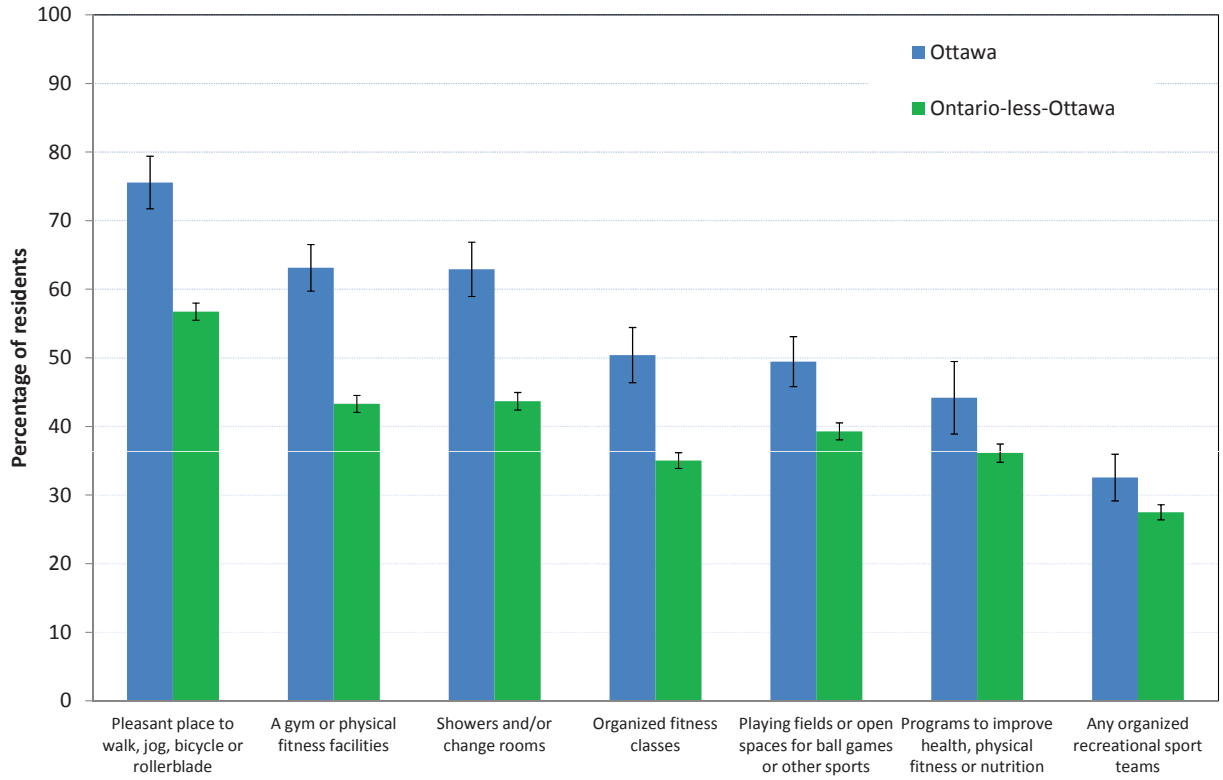
- Access to physical activity facilities at or near work was higher among the Ottawa working population (aged 15 to 75 years) than the working population in the rest of Ontario.
- No significant differences in access to physical activity facilities at work were observed by sex or urban/rural location of residence.

Table 34. Access to physical activity facilities at work among the working population (15 to 75 years) by social determinants of health, Ottawa, 2007/08.

	Access to physical activity facilities at work (Working population aged 15 to 75 years) (2007/08)
Total sample	Three quarters of working residents (75.6% (71.7%, 79.4%)) said that there was a pleasant place to walk, jog, or bicycle near work. 63.1% (59.7%, 66.5%) said that there was a gym or physical fitness facility at/or near work. 62.9% (58.9%, 66.9%) said that there were showers and/or change rooms to use. 50.4% (46.4%, 54.5%) said that there were organized fitness classes at/or near work. 50% (45.7%, 53.1%) said that there were playing fields or open spaces for ball games or other sports at/or near work. 32.6% (29.1%, 36.0%) said that there were organized recreational sports teams at/or near work. 44.8% (39.7%, 49.9%) said that there were programs to improve health, physical fitness or nutrition at/or near work.
Rest of Ontario	Access to physical activity facilities at or near work was higher among the Ottawa working population than the working population in the rest of Ontario.

Access to physical activity facilities at work (Working population aged 15 to 75 years) (2007/08)	
Social Determinants of Health (for Ottawa sample)	
Sex	There were no differences between males and females in access to physical activity facilities at/or near work.
Urban/rural residence	There were no differences between urban and rural dwellers in access to physical activity facilities at/or near work. Note that urban/rural residence does not account for location of the respondents' workplace.

Figure 29. Percentage of working population (15 to 75 years) who report access to physical activity facilities at/or near work, Ottawa and the rest of Ontario, 2007/08.



Data source: Canadian Community Health Survey (2007/2008). Ontario Share File. Statistics Canada.
Vertical bars represent 95% confidence intervals.

Recreation Environment in Ottawa

Neighbourhood recreation measures include green space area (km^2), park area (m^2), bike and walking path length (km), winter and summer outdoor recreation facilities, and indoor recreation facilities. The recreation environment indicators were defined using the NAICS and were only included if they provided access for free or minimal cost. Green space managed by the City or the National Capital Commission was included in the area of parkland variable, while non-managed areas were considered green space.

Recreation environment information was provided by the ONS (www.neighbourhoodstudy.ca) and was collected in 2006. In Table 34, City of Ottawa neighbourhoods have been grouped according to their SES quintile. Within each SES quintile each recreation resource was ranked primarily using the resource density per 1,000 people in the neighbourhood followed by total number of raw counts of the resource within the neighbourhood. Density of resources was used as the predominant measure because it best represents the demand on the resources relative to the number of residents in the neighbourhood rather than the raw counts. Density is a good measure in urban neighbourhoods (as are the majority in Ottawa), but has the potential to miss-rank rural neighbourhoods. Where there are fewer residents per land area and greater distances between households and resources such as in rural areas, density becomes a less important measure.

In 2006, the top three neighbourhoods in the City of Ottawa for density of recreation resources are listed below:

Green space area (km^2):

1) Greenbelt with 32.1 km^2 per 1,000 (181 km^2),
2) Riverside South-Leitrim with 2.8 km^2 per 1,000 (20 km^2), and
3) Hunt Club-Ottawa Airport with 1.5 km^2 per 1,000 (6.4 km^2).

Park area (m^2):

1) Fitzroy Harbour-West Carleton with 32,940.9 m^2 per 1,000 (3,745,784.4 m^2),
2) Munster Hamlet-Richmond with 21,805.1 m^2 per 1,000 (2,565,395.5 m^2), and
3) Rockcliffe-Manor Park with 12,513.5 m^2 per 1,000 (654,221.9 m^2).

Bike and walking path length (km):

1) Greenbelt with 24.9 km per 1,000 (140.8 km),
2) East Industrial with 4.5 km per 1,000 (37.1 km), and
3) Merivale Gardens-Grenfell Glen-Pineglen-Country Place with 3.8 km per 1,000 (10.4 km).

Winter outdoor recreation facilities:

1) Merivale Gardens-Grenfell Glen-Pineglen-Country Place with 1.1 per 1,000 (3 facilities),
2) Bells Corners East and Crystal Bay-Lakeview Park tied with 0.7 per 1,000 (3 facilities), and
3) Hunt Club Upper-Blossom Park-Timbermill with 0.6 per 1,000 (4 facilities).

Summer outdoor recreation facilities:

1) Merivale Gardens-Grenfell Glen-Pineglen-Country Place with 14.0 per 1,000 (38 facilities),
2) Cumberland with 9.8 per 1,000 (44 facilities), and
3) Hunt Club Woods-Quintarra-Revelstoke with 8.9 per 1,000 (50 facilities).

Indoor recreation facilities:

1) Byward Market with 0.7 per 1,000 (3 facilities),
2) Lowertown with 0.6 per 1,000 (5 facilities), and
3) Metcalfe and Carleton Heights-Rideauview tied with 0.6 per 1,000 (4 facilities).

While the top three neighbourhoods have been provided for each recreation resource, it is much more difficult to identify the bottom three neighbourhoods due to the number of neighbourhoods that are either tied with no recreation resource or that present with a very low quantity of the resources.

The neighbourhood of Woodroffe-Lincoln Heights had **no** recreation facilities (winter, summer or indoor) available within neighbourhood boundaries. The neighbourhood of Stittsville-Basswood had the poorest combination of recreation resources with no winter outdoor or indoor recreation facilities, only 13 summer outdoor facilities, and low rankings for green space, park area and bike and walking path length.

The neighbourhood of Hunt Club-Quintarra-Revelstoke had the highest percentage of residents who were moderately or highly physically active at 97% while the Bayshore neighbourhood had the lowest percentage at 43%*.

The neighbourhood of Glen Cairn-Kanata South-Business Park had the highest percentage of residents with a BMI of 25 kg/m^2 or greater at 68% while the neighbourhood of Rockcliffe-Manor Park had the lowest percentage of overweight or obese residents at 29%*.

*=Interpret with caution, high sampling variability

Table 35. Neighbourhood recreation environment by socio-economic quintiles in Ottawa, 2006

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 1 – Most advantaged socio-economically																				
Beaverbrook	14	1.0	0.2	3	475721.4	9083.6	2	17.7	3.4	12	1	0.2	9	26	5.0	9T	1	0.2	41.9* ± 17.4	NR
Briar Green – Leslie Park	18	0.6	0.1	6	334992.3	6788.3	7	7.2	1.5	6T	2	0.4	16	17	3.4	11T	0	0.0	NR	NR
Bridlewood – Emerald Meadows	9	3.9	0.2	20	269777.2	1410.3	10	22.0	1.2	4	7	0.4	18	58	3.0	10T	1	0.1	50.4 ± 8.8	78.1 ± 7.6
Carp – Hardwood Plains	15	1.2	0.1	8	526909.7	5866.8	13	5.9	0.7	9T	3	0.3	6	47	5.2	2T	4	0.4	54.0 ± 9.8	78.9 ± 8.2
Civic Hospital-Central Park	10	2.1	0.2	5	679946.8	6854.1	5	22.1	2.2	11T	2	0.2	15	36	3.6	11T	0	0.0	45.8 ± 12.7	76.0 ± 11.8
Glebe – Dows Lake	17T	0.7	0.1	15	364923.8	3341.8	11	13.5	1.2	14T	1	0.1	19	29	2.7	2T	4	0.4	33.7 ± 10.2	86.7 ± 7.7
Greely	6	4.6	0.4	12	456045.1	3904.1	15	6.9	0.6	9T	3	0.3	5	65	5.6	10T	1	0.1	60.0 ± 11.5	78.8 ± 11.1
Island Park	17T	0.7	0.1	17	114133.5	2209.8	6	8.7	1.7	6T	2	0.4	13	20	3.9	11T	0	0.0	42.9* ± 15.0	91.9 ± 8.8
Kanata Lakes – Marchwood Lakeside – Morgan's Grant – Kanata North Business Park	4	18.6	1.0	11	734744.7	4033.9	4	43.8	2.4	10	3	0.2	14	69	3.8	7	3	0.2	42.7 ± 11.2	78.9 ± 9.5

Ranked #1 within SES quintile | Ranked #2 within SES quintile | Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Kars – Osgoode	16	0.9	0.1	9	395087.2	4903.7	18T	0.0	0.0	11T	2	0.2	12	35	4.3	8T	2	0.2	52.6 ± 13.0	81.8 ± 10.2
Manotick – North Gower	11	2.0	0.2	7	549936.7	6009.8	18T	0.0	0.0	2	5	0.5	4	55	6.0	8T	2	0.2	50.0 ± 12.3	89.3 ± 8.1
Merivale Gardens – Grenfell Glen – Pineglen – Country Place	2	4.2	1.5	4	240347.4	8839.6	1	10.4	3.8	1	3	1.1	1	38	14.0	3	1	0.4	NR	NR
Metcalfe	13	1.3	0.2	10	295293.0	4750.7	18T	0.0	0.0	3	3	0.5	2	44	7.1	1	4	0.6	48.1 ± 13.6	90.0 ± 8.3
Munster Hamlet – Richmond	8	3.0	0.3	1	2565395.5	21805.1	9	15.7	1.3	8	4	0.3	3	73	6.2	8T	2	0.2	56.1 ± 12.0	82.8 ± 9.2
Navan – Vars	12	1.6	0.2	2	1078755.6	11067.3	12	11.4	1.2	5	4	0.4	7	50	5.1	5	3	0.3	61.2 ± 9.4	79.8 ± 8.1
New Barrhaven – Stonebridge	5	14.7	0.7	13	804654.2	3772.8	14	13.4	0.6	13	3	0.1	17	69	3.2	11T	0	0.0	41.0 ± 9.6	78.4 ± 8.2
Orleans Chapel Hill South	3	7.9	1.4	18	93776.2	1686.2	3	18.1	3.3	6T	2	0.4	8	28	5.0	9T	1	0.2	52.2 ± 10.3	81.7 ± 8.4
Riverside South – Leitrim	1	20.0	2.8	16	213494.2	3005.4	8	9.8	1.4	14T	1	0.1	11	33	4.6	6	2	0.3	36.0* ± 13.3	72.3 ± 12.8
Stittsville	7	5.3	0.3	14	577866.1	3735.4	17	3.3	0.2	7	5	0.3	10	76	4.9	4	5	0.3	51.5 ± 9.7	93.1 ± 5.3
Stittsville – Basswood	19	0.2	0.0	19	123860.6	1569.5	16	3.0	0.4	15	0	0.0	20	13	1.6	11T	0	0.0	NR	NR

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 2																				
Barrhaven	15	0.8	0.0	15	336447.0	1879.3	11	18.7	1.0	11	4	0.2	13	58	3.2	7T	1	0.1	53.8 ± 9.0	73 ± 8.3
Chapman Mills – Rideau Crest – Davidson Heights	4	5.0	0.3	17	84245.5	571.2	15	5.5	0.4	15	1	0.1	17	27	1.8	7T	1	0.1	52.9 ± 11.7	75.8 ± 10.3
Cumberland	12	0.6	0.1	2	364437.2	8093.6	16T	0.0	0.0	13	1	0.2	1	44	9.8	5T	1	0.2	59.6 ± 10.2	81.0 ± 8.6
Fitzroy Harbour – West Carleton	5	3.8	0.3	1	3745784.4	32940.9	16T	0.0	0.0	3	5	0.4	6	54	4.7	2T	3	0.3	NR	NR
Glen Cairn – Kanata South Business Park	6	2.3	0.3	5	341218.6	4332.7	1	20.8	2.6	9T	2	0.3	5	38	4.8	3	2	0.3	68.0 ± 12.9	78.3 ± 11.9
Hunt Club Woods – Quintarra – Revelstoke	1	3.6	0.6	6	204238.6	3615.6	4	11.4	2.0	6T	2	0.4	2	50	8.9	8T	0	0.0	42.1* ± 15.7	96.7 ± 6.4
Katimavik – Hazeldean	7	2.5	0.2	10	388498.0	2633.9	6	24.9	1.7	12	3	0.2	9	62	4.2	7T	1	0.1	43.0 ± 10.5	80.3 ± 8.9
Orleans Avalon – Notting Gate – Fallingbrook – Gardenway South	3	12.5	0.4	14	588784.9	1895.8	12	28.4	0.9	14	3	0.1	16	64	2.1	6	3	0.1	51.1 ± 6.6	80.3 ± 5.4

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Orleans Chapel Hill	10T	1.2	0.1	11	222198.8	2598.7	13	7.8	0.9	5	3	0.4	14	27	3.2	8T	0	0.0	46.4 ± 10.7	78.2 ± 9.2
Orleans Chatelaine Village	2	2.2	0.5	3	311131.2	6659.9	5	8.3	1.8	6T	2	0.4	4	24	5.1	5T	1	0.2	NR	NR
Orleans North West	8	1.8	0.2	4	577749.6	5185.7	3	22.2	2.0	8	3	0.3	10	46	4.1	8T	0	0.0	56.7 ± 9.5	76.5 ± 8.4
Orleans Queenswood Heights	10T	1.2	0.1	13	274254.1	2038.8	8	17.2	1.3	7	4	0.3	12	45	3.3	7T	1	0.1	56.4 ± 9.3	82.9 ± 7.2
Orleans Village – Chateauneuf	16	0.6	0.0	12	314891.1	2438.9	9	15.3	1.2	1	6	0.5	7	59	4.6	7T	1	0.1	60.5 ± 6.9	77.6 ± 6.0
Ottawa South	11	0.7	0.1	7	290994.6	3569.2	7	12.7	1.6	2	4	0.5	3	49	6.0	1	3	0.4	NR	NR
Playfair Park – Lynda Park – Guildwood Estates	13	0.5	0.1	9	192780.6	3191.0	14	3.7	0.6	9T	2	0.3	15	16	2.6	8T	0	0.0	39.1* ± 14.1	85.7 ± 11.6
Rothwell Heights – Beacon Hill North	9	1.5	0.1	8	341338.6	3310.3	2	24.0	2.3	4	4	0.4	8	46	4.5	2T	3	0.3	44.6 ± 10.7	81.3 ± 9.6
Trend-Arlington	14	0.3	0.1	16	61144.7	1560.7	10	4.6	1.2	10	1	0.3	11	15	3.8	4	1	0.3	NR	NR

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 3																				
Bells Corners East	2	3.4	0.7	4	223960.6	4967.0	7	6.7	1.5	1	3	0.7	1	32	7.1	2	2	0.4	46.9* ± 17.3	NR
Bells Corners West	7	1.4	0.3	15	56008.0	1275.2	13	4.4	1.0	8T	1	0.2	16	9	2.0	5T	1	0.2	48.4* ± 17.6	NR
Blackburn Hamlet	5	2.5	0.3	13	172643.1	2032.5	9	12.2	1.4	7T	2	0.2	11	29	3.4	4T	2	0.2	57.4 ± 12.4	78.2 ± 10.9
Byward Market	14	0.3	0.1	8	144714.1	3198.4	14	4.0	0.9	8T	1	0.2	17	8	1.8	1	3	0.7	40.0* ± 14.3	84.4 ± 12.6
Carlingwood West – Glabar Park – McKellar Heights	16	0.1	0.0	16	66066.4	1246.8	16	2.1	0.4	8T	1	0.2	12	18	3.4	7T	0	0.0	NR	NR
Centrepointe	10	0.9	0.1	9	218628.8	2994.9	10	8.8	1.2	6T	2	0.3	15	15	2.1	7T	0	0.0	40.9* ± 14.5	80.0 ± 12.4
Greenbelt	1	181.8	32.1	3	385947.9	6811.0	1	140.8	24.9	8T	1	0.2	3	31	5.5	5T	1	0.2	NR	NR
Hunt Club Park	12	0.5	0.1	11	148277.5	2084.6	17	2.5	0.3	6T	2	0.3	8	26	3.7	7T	0	0.0	50.0 ± 14.8	74.4 ± 13.7
Hunt Club Upper – Blossom Park – Timbermill	3	2.7	0.4	12	149618.2	2071.7	11	7.0	1.0	2	4	0.6	7	32	4.4	6T	1	0.1	48.9 ± 14.6	85.7 ± 10.6
Laurentian	15	0.2	0.0	14	157456.9	1654.5	15	7.1	0.7	5	3	0.3	10	32	3.4	6T	1	0.1	41.8 ± 11.8	80.7 ± 10.2
Lindenlea – New Edinburgh	13T	0.4	0.1	6	210931.8	4015.5	12	5.4	1.0	4T	2	0.4	14	15	2.9	5T	1	0.2	34.0* ± 13.5	81.1 ± 12.6

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Orleans Central	13T	0.4	0.1	5	148239.0	4282.8	2	10.5	3.0	3	2	0.6	2	22	6.4	3	1	0.3	56.3 ± 17.2	NR
Riverside Park	4	2.0	0.4	2	472811.0	10255.1	3	13.2	2.9	8T	1	0.2	4	24	5.2	5T	1	0.2	NR	NR
Rockcliffe – Manor Park	6	1.7	0.3	1	654221.9	12513.5	5	10.0	1.9	4T	2	0.4	9	19	3.6	5T	1	0.2	28.9* ± 14.4	88.9 ± 10.3
Tanglewood	8	1.0	0.2	17	54842.9	1120.3	4	11.0	2.3	8T	1	0.2	13	16	3.3	5T	1	0.2	NR	NR
Westboro	11	0.8	0.1	10	257641.1	2729.8	8	13.0	1.4	7T	2	0.2	6	42	4.5	4T	2	0.2	38.7 ± 12.1	67.3 ± 12.4
Woodvale – Craig Henry – Manordale – Estates of Arlington Woods	9	1.1	0.1	7	284825.8	3280.4	6	14.9	1.7	7T	2	0.2	5	41	4.7	7T	0	0.0	59.0 ± 12.3	78.8 ± 11.1

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 4																				
Beacon Hill South – Cardinal Heights	14T	0.3	0.0	7	204548.9	2962.8	7	6.9	1.0	3T	3	0.4	2	43	6.2	4	2	0.3	51.2 ± 14.9	84.4 ± 12.6
Billings Bridge – Alta Vista	4	1.9	0.2	4	535257.9	4533.8	5	13.9	1.2	5	3	0.3	4	46	3.9	9T	0	0.0	53.7 ± 10.8	76.5 ± 10.1
Borden Farm – Stewart Farm – Parkwood Hills – Fisher Glen	13T	0.4	0.0	8	279071.4	2742.2	12	7.1	0.7	7T	2	0.2	13	22	2.2	9T	0	0.0	41.8 ± 11.8	83.0 ± 10.1
Braemar Park – Bel Air Heights – Copeland Park	9T	0.6	0.1	2	441221.8	5967.3	3	11.3	1.5	6T	2	0.3	9	24	3.2	9T	0	0.0	48.1 ± 13.6	82.5 ± 11.8
Carleton Heights – Rideauview	9T	0.6	0.1	16	71646.7	1127.6	10	5.0	0.8	6T	2	0.3	15	13	2.0	1	4	0.6	42.6* ± 14.1	75.0 ± 14.1
Carson Grove – Carson Meadows	5	1.3	0.2	14	117518.2	1463.2	13	6.0	0.7	3T	3	0.4	10	22	2.7	9T	0	0.0	49.3 ± 11.6	80.7 ± 10.2
Centretown	12	0.5	0.0	18	112066.3	463.6	11	16.3	0.7	9	2	0.1	17	21	0.9	5	4	0.2	38.9 ± 10.1	82.9 ± 8.1

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Cityview – Skyline – Fisher Heights	14T	0.3	0.0	13	105164.7	1675.3	17	3.4	0.5	8T	1	0.2	6	24	3.8	9T	0	0.0	63.4 ± 14.7	75.0 ± 14.1
Crestview – Meadowlands	15	0.2	0.0	17	83943.7	985.5	6	8.6	1.0	11T	0	0.0	8	28	3.3	8T	1	0.1	57.4 ± 13.2	75.0 ± 12.3
Crystal Bay – Lakeview Park	2	4.0	1.0	1	277492.6	6692.7	2	8.9	2.2	1	3	0.7	3	24	5.8	2	2	0.5	53.6 ± 10.7	86.2 ± 8.4
Elmvale – Eastway – Riverview – Riverview Park West	7	1.3	0.1	9	399650.1	2633.1	15	9.7	0.6	4	4	0.3	7	51	3.4	3	5	0.3	47.6 ± 9.6	78.7 ± 8.5
Greenboro East	8	1.2	0.1	10	247054.4	2584.1	18	4.0	0.4	10T	1	0.1	5	37	3.9	8T	1	0.1	57.4 ± 14.1	82.6 ± 11.0
Hunt Club East – Western Community	3	2.3	0.3	11	168280.2	1965.3	14	5.9	0.7	7T	2	0.2	11	21	2.5	8T	1	0.1	48.1 ± 13.6	73.8 ± 13.3
Hunt Club – Ottawa Airport	1	6.4	1.5	3	215462.5	4914.0	9	4.4	1.0	8T	1	0.2	16	7	1.6	9T	0	0.0	NR	NR
Ottawa East	11	0.3	0.1	5	176515.0	3619.0	4	6.5	1.3	11T	0	0.0	12	12	2.5	7	1	0.2	32.9 ± 10.4	90.1 ± 6.9
Pineview	10	0.4	0.1	6	196145.1	3524.2	8	5.8	1.0	2	3	0.5	1	39	7.0	9T	0	0.0	41.0* ± 15.4	85.3 ± 11.9
Sandy Hill – Ottawa East	13T	0.4	0.0	15	131481.7	1208.6	16	6.0	0.6	10T	1	0.1	14	23	2.1	6	2	0.2	38.1 ± 10.4	81.8 ± 8.6
Woodroffe – Lincoln Heights	6	0.7	0.2	12	75868.0	1741.6	1	11.2	2.6	11T	0	0.0	18	0	0.0	9T	0	0.0	NR	NR

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Socio-economic quintile 5 – Most disadvantaged socioeconomically																				
Bayshore	10	0.4	0.1	10	154783.4	1965.0	10	6.3	0.8	11T	1	0.1	13	18	2.3	8T	1	0.1	56.3 ± 17.2	43.3* ± 17.7
Britannia Village	3	1.3	0.2	1	476298.1	6101.4	4	9.2	1.2	12T	0	0.0	4	32	4.1	3	4	0.5	NR	NR
Carlington	11T	0.4	0.0	7	234268.4	2317.9	11	7.4	0.7	5T	4	0.4	9	29	2.9	4	3	0.3	52.3 ± 12.1	64.4 ± 12.2
CFB Rockcliffe-NRC	2	3.4	0.6	8	114987.4	2132.7	2	12.9	2.4	12T	0	0.0	15	12	2.2	9T	0	0.0	47.8 ± 11.8	59.2 ± 13.8
Cummings	5	1.1	0.1	9	183720.9	2124.0	6	9.8	1.1	2	4	0.5	3	37	4.3	8T	1	0.1	35.1* ± 12.4	71.4 ± 12.6
East Industrial	1	4.9	0.6	12	123045.7	1490.2	1	37.1	4.5	9T	2	0.2	19	11	1.3	9T	0	0.0	NR	NR
Emerald Woods – Sawmill Creek	4T	1.0	0.2	13	67686.2	1319.2	12	3.4	0.7	1	3	0.6	10	15	2.9	9T	0	0.0	NR	NR
Hawthorne Meadows – Sheffield Glen	13T	0.1	0.0	17	41556.6	642.7	16	1.7	0.3	8	2	0.3	14	14	2.2	9T	0	0.0	51.4 ± 16.1	83.3 ± 13.3
Hintonburg – Mechanicsville	11T	0.4	0.0	18	57210.5	599.6	13	5.9	0.6	11T	1	0.1	8	29	3.0	6T	2	0.2	41.2* ± 13.5	87.2 ± 9.5
Iris	9	0.5	0.1	4	224601.6	3295.4	5	7.9	1.2	6	3	0.4	2	32	4.7	8T	1	0.1	42.9* ± 16.4	NR
Ledbury – Heron Gate – Ridgemont – Elmwood	7	0.7	0.1	6	331838.4	2431.3	17	2.0	0.1	4	5	0.4	6	43	3.2	5	3	0.2	38.2* ± 12.8	78.0 ± 11.5

Ranked #1 within SES quintile

Ranked #2 within SES quintile

Ranked #3 within SES quintile

Neighbourhood	Green space area (km^2)			Park area (m^2)			Bike and walking path length (km)			Winter outdoor recreation facilities			Summer outdoor recreation facilities			Indoor recreation facilities			% Overweight or obese (BMI >25.0 ± 95% CI)	% moderately or highly physically active
	Rank	km^2	/1,000	Rank	m^2	/1,000	Rank	km	/person	Rank	Count	/1,000	Rank	Count	/1,000	Rank	Count	/1,000		
Lowertown	12T	0.2	0.0	15	95623.6	1171.1	15	3.6	0.4	11T	1	0.1	17	15	1.8	1	5	0.6	37.7* ± 13.1	86.7 ± 9.9
Overbrook – McArthur	8T	0.6	0.1	5	292974.6	2555.7	7	11.1	1.0	7	3	0.3	7	36	3.1	6T	2	0.2	57.1 ± 8.6	77.5 ± 8.1
Qualicum – Redwood Park	8T	0.6	0.1	2	257754.9	5969.1	8	4.5	1.0	3	2	0.5	1	24	5.6	7	1	0.2	NR	NR
South Keys – Heron Gate – Greenboro West	4T	1.0	0.2	16	49247.2	1055.3	3	7.0	1.5	10	1	0.2	16	9	1.9	9T	0	0.0	NR	NR
Vanier North	12T	0.2	0.0	11	127779.3	1544.8	18	0.8	0.1	9T	2	0.2	11	22	2.7	9T	0	0.0	52.5 ± 9.8	78.6 ± 8.8
Vanier South	13T	0.1	0.0	14	88349.8	1252.8	19	0.6	0.1	12T	0	0.0	18	11	1.6	2	4	0.6	61.7 ± 10.6	72.1 ± 10.7
West Centertown	13T	0.1	0.0	19	24973.6	209.0	14	5.3	0.4	9T	2	0.2	12	30	2.5	6T	2	0.2	39.1* ± 14.1	81.0 ± 11.9
Whitehaven – Queensway Terrace North	6	0.8	0.1	3	395045.6	3479.1	9	9.0	0.8	5T	4	0.4	5	39	3.4	6T	2	0.2	39.0 ± 10.9	66.1 ± 12.4

Data source: Neighbourhood data – Ottawa Neighbourhood Study (2006); BMI data – Rapid Risk Factor Surveillance System (2003-2007); physical activity data – Rapid Risk Factor Surveillance System using the International Physical Activity Questionnaire (2003-2007).
*=Interpret with caution due to high sampling variability, BMI – body mass index, CI – confidence interval, NR – not reportable, T – denotes a tie.

Ranked #1 within SES quintile
Ranked #2 within SES quintile
Ranked #3 within SES quintile

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CHAPTER 4

Healthy Weights

4. HEALTHY WEIGHTS

Over recent decades, overweight and obesity have increased in prevalence in both adults and children living across Canada.[78] Overweight and obesity have clear public health impacts. Co-morbidities associated with excess body weight include: hypertension, Type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea and respiratory problems, and some types of cancer (endometrial, breast, prostate and colon).[79, 80] Obesity is also associated with complications of pregnancy, menstrual irregularities, stroke, cellulitis, immobility and low back pain, and depression.[79, 80]

Maintaining a healthy weight is important for the reduction of an individual's overall risk for several chronic diseases and premature mortality, as well as increasing quality of life. This section of the report provides data on various measures of healthy weights including self-reported BMI in youth and adults, body image, intentions toward body weight, and self-reported waist circumference in adults. Where possible and appropriate, we have profiled the information that is currently available at the local Ottawa level. However, it is important to acknowledge that the measures presented herein are not necessarily a comprehensive or all inclusive list of factors important to healthy weights.

Canadian Classification of Overweight and Obesity

BMI is a common tool used to classify individuals according to the health risks related to weight status. A BMI in the underweight, overweight and obese categories is associated with several adverse health outcomes. BMI is calculated as body weight in kilograms divided by height in metres squared (kg/m^2). Table 35 provides a summary of the *Guidelines for Body Weight Classification in Adults* using BMI. This system is used among adults 18 years of age and older with the exception of pregnant and lactating women. Important to note is that the classification system has the potential to under or overestimate health risks in certain adults, such as those with a high muscle mass and lean build, young adults who have not reached full growth, and adults over 65 years of age, and certain ethnic groups.

Table 36. Health risk classification according to body mass index (BMI)

Classification	BMI category (kg/m^2)	Risk for developing health problems
Underweight	<18.5	Increased
Normal weight	18.5 – 24.9	Least
Overweight	25.0 – 29.9	Increased
Obese class I	30.0 – 34.9	High
Obese class II	35.0 – 39.9	Very high
Obese class III	≥40.0	Extremely high

Source: Health Canada. *Canadian Guidelines for Body Weight Classification in Adults*. Ottawa: Minister of Public Works and Government Services Canada; 2003. *Note: For persons 65 years and older the 'normal' range may begin slightly above BMI 18.5 and extend into the 'overweight' range.*

BMI is a measure of total body mass relative to height and is not able to distinguish between fat mass and fat-free mass, both of which have different relationships with various co-morbid conditions and premature mortality. Therefore, another indicator that may be taken into consideration, along with BMI, is waist circumference. Waist circumference is a tool that is used as an indicator of health risks associated with excess abdominal fat. Table 36 provides the waist circumference health risk classifications defined by Health Canada.

Table 37. Health risk classification according to waist circumference

Sex	Waist Circumference	Health Risk¥
Female	≥88 cm or 35 inches	Increased
Male	≥102 cm or 40 inches	Increased

Source: Health Canada. *Canadian Guidelines for Body Weight Classification in Adults.* Ottawa: Minister of Public Works and Government Services Canada; 2003. ¥Risk is relative to a waist circumference <102 cm for males and <88 cm for females.

Self-reported versus measured body mass index and waist circumference

Similar to the physical activity data, the majority of Canadian data surrounding body mass measurement have been self-reported. All of the findings reported within the "Healthy Weights" section are based on self-reported BMI (height and weight) and waist circumference data for the Ottawa population. One bias with self-reported BMI data is that people tend to underestimate their weight and overestimate their height, resulting in lower estimates of the prevalence of obesity compared with measured data.[81] A study from the 2005 CCHS found that the prevalence of obesity was nine percentage points higher among male measured estimates and six points higher among females (7% higher overall). The prevalence of overweight was close to one percentage point higher for males and three points higher for females.[82]

In light of the evidence that self-reported BMI data likely underestimates true levels of overweight and obesity (using direct measurements)[81], it is important to interpret these findings with caution and with the understanding that the proportion of the population that has been classified as overweight or obese using the self-report methods is likely underestimated.

Body Mass Index among Youth

Overweight and obese children are more likely than healthy weight children to face health problems such as hypertension, glucose intolerance, orthopaedic complications, as well as issues concerning social acceptance, body image and self-esteem.[83] Furthermore, children who are obese are more likely to be overweight and obese as adults.[83] The 2009 and 2011 OSDUHS asked students in grades 7 to 12 to self-report their height and weight. BMI was categorized using the 2007 World Health Organization age- and sex-specific growth reference charts used to categorize BMI as overweight, obese, or neither overweight nor obese.[84]

HIGHLIGHTS

- The majority (76%) of Ottawa students in grades 7 to 12 *self-reported* as neither overweight nor obese.
- One in five (21%) Ottawa students in grades 7 to 12 *self-reported* as either overweight or obese.
- In 2009, grade 7 to 12 students in Ottawa were **less likely** than grade 7 to 12 students in the rest of Ontario to have self-reported as obese.
- In 2009, students in grades 9 to 12 were more likely than students in grades 7 and 8 to be **neither overweight nor obese.**
- Immigrant students were **more likely** than non-immigrant students to report as overweight.
- Students who spoke a language other than English or French at home were more likely to be overweight than those who spoke English only.
- There was some indication that females and those who were more active were more likely to be neither overweight nor obese; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences in youth BMI categories were observed by family SES or parental education.

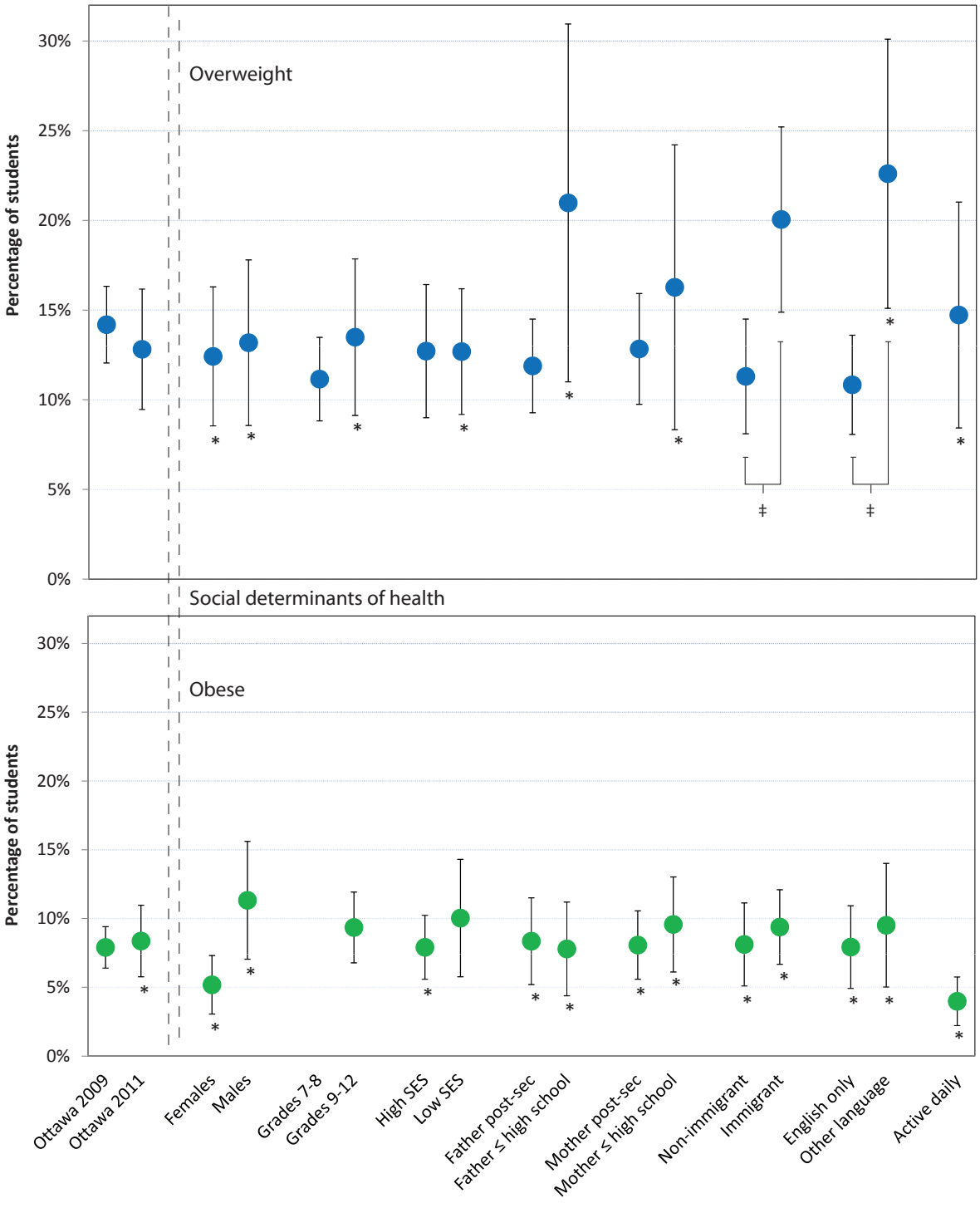
Table 38. Body mass index among students (grades 7 to 12) by social determinants of health, Ottawa, 2009 – 2011

	Body mass index in students in 2011 (Grades 7 to 12)	Historical patterns of body mass index (2009 vs. 2011)
Ottawa students	The majority (76.3% (70.2%, 81.5%)) of students in Ottawa self-reported as **neither overweight nor obese**. An additional 12.8% (9.5%, 17.1%) of students self-reported as **overweight** and 8.4%* (5.8%, 12.0%) as **obese**. A further 2.5%* (1.4%, 4.4%) did not report their BMI.	Similarly, in 2009, the majority (70.1% (67.3%, 72.8%)) of students in Ottawa self-reported as **neither overweight nor obese**. An additional 14.2% (12.1%, 16.6%)) of students self-reported as **overweight** and 7.9% (6.4%, 9.7%) as **obese**. 7.8% (5.8%, 10.4%) did not report their BMI.
Ontario less Ottawa	Data are not releasable for 2011 at the time of this publication.	In 2009, students in the rest of Ontario were more likely than students in Ottawa to be **obese** (10.8% (10.0%, 11.8%) vs. 7.9% (6.4%, 9.7%)).
Social Determinants of Health (for Ottawa sample)		
Sex	There is some indication that females were more likely to be **neither overweight nor obese** compared to males; however, this difference was not statistically significant (81.1% (76.7%, 84.9%) vs. 71.9% (62.9%, 79.4%)).	Similarly, females were more likely to be **neither overweight nor obese** compared to males; however, this difference was not statistically significant (74.3% (69.5%, 78.5%) vs. 66.2% (62.9%, 69.4%)). A non-significant difference was observed whereby males were more likely than females to be **overweight** (16.7% (13.7%, 20.2%) vs. 11.5% (8.8%, 14.9%)) or **obese** (10.4% (8.1%, 13.4%) vs. 5.2%* (3.2%, 8.2%)).
Grades	No differences in BMI categories were observed between grades 7-8 and grades 9-12.	Students in grades 9-12 were more likely than students in grades 7-8 to be **neither overweight nor obese** (74.3% (70.8%, 77.5%) vs. 60.4% (55.4%, 65.3%)).
Family SES	No differences in BMI categories were observed between low and high SES students.	Family SES was not available in 2009.

	Body mass index in students in 2011 (Grades 7 to 12)	Historical patterns of body mass index (2009 vs. 2011)
Father's education	No differences in BMI categories were observed by paternal education level.	No differences in BMI categories were observed by paternal education level.
Mother's education	No differences in BMI categories were observed by maternal education level.	No differences in BMI categories were observed by maternal education level.
Immigration status	Non-immigrant students (78.5% (71.7%, 84.0%)) were more likely to be **neither overweight nor obese** than immigrant students (65.8% (58.8%, 72.1%)). Immigrant students (20.1% (14.9%, 26.5%)) were more likely to be **overweight** than non-immigrant students (11.3% (8.1%, 15.6%)).	In 2009, a non-significant difference was observed whereby non-immigrants were more likely than immigrants to be **obese** (8.2% (6.6%, 10.2%) vs. 4.9%* (3.2%, 7.4%)).
Language spoken at home	Students who reported they spoke English only (79.0% (73.2%, 83.8%)) at home were more likely to be **neither overweight nor obese** than students who spoke a language other than English or French at home (63.4% (53.6%, 72.3%)). In addition, although not significant, students who spoke English or French (83.3% (67.6%, 92.2%)) at home were also more likely than those who spoke another language to be neither overweight nor obese. Students who reported they spoke a language other than English or French at home (22.6%* (15.1%, 32.4%)) were more likely to be **overweight** than students who spoke only English at home (10.8% (8.1%, 14.4%)).	A non-significant difference was observed whereby students who reported they spoke a language other than English or French at home (18.5% (15.0%, 22.6%)) were more likely than students who spoke only English (11.7% (9.5%, 14.3%)) to be **overweight**.
Physical activity level	No differences in BMI categories were observed for physical activity level.	Students who reported that they were active on 4 to 6 days per week (75.4% (69.0%, 80.9%)) were more likely than students who were inactive (62.6% (54.1%, 70.3%)) to report being **neither overweight nor obese**; however, this difference was not statistically significant.

*=Interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.

Figure 30. Percentage of students in grades 7 to 12 who self-reported as overweight or obese by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability, ‡ denotes significant differences between groups.
Vertical bars represent 95% confidence intervals. Post-sec. – post-secondary, SES – socio-economic status.

Youth Body Image

Body image is the mental picture that an individual has about their body – what it looks like, what they believe about it and how they feel about it. Individuals with a negative body image have a greater likelihood of unhealthy weight control behaviours such as dieting and binge eating[85] and are more likely to suffer from feelings of anxiety, depression, and low self-esteem.[86] The 2009 and 2011 OSDUHS asked students in grades 7 to 12 about how they perceived their body weight. Students were asked to identify whether they felt: 1) too thin (underweight); 2) about the right weight; or 3) too fat (overweight).

HIGHLIGHTS

- The majority (72%) of Ottawa students in grades 7 to 12 reported that their body weight was **just right**.
- Over one in four (28%) grade 7 to 12 students in Ottawa reported they were either **too thin** or **too fat**.
- In 2009, grade 7 to 12 students in Ottawa were more likely than grade 7 to 12 students in the rest of Ontario to report their body weight was **just right**.
- Students who were overweight or obese were more likely to report feeling that they were **too fat** compared to students who were neither overweight nor obese.
- There was some indication that females were more likely to report being **too fat** and high SES students, students whose mothers had some post-secondary education and those who were more active were more likely to report being **about the right size**; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences in body image were observed by grade, family SES, paternal education level, immigration status, or language spoken at home.

Table 39. Perceptions of body image among students (grades 7 to 12) by social determinants of health, Ottawa, 2009 – 2011

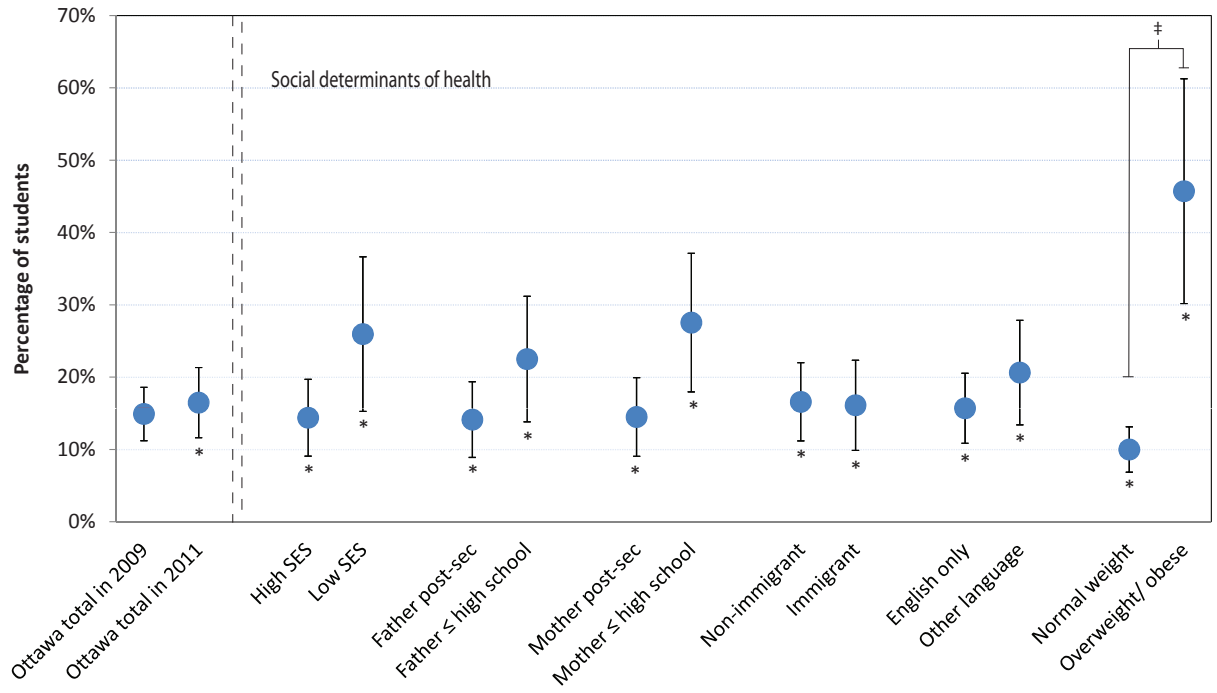
	Youth body image in 2011 (Grades 7 to 12)	Historical patterns in youth body image (2009 vs. 2011)
Ottawa students	The majority (71.8% (67.6%, 75.6%)) of students in Ottawa reported that they felt their weight was **about right**. An additional 16.5%* (11.6%, 22.9%)) of students reported that they felt they were **too fat** and 11.7%* (8.0%, 17.0%) reported that they felt they were **too thin**.	A similar pattern was observed in 2009.
Ontario less Ottawa	Data are not releasable for 2011 at the time of this publication.	In 2009, students in Ottawa were more likely than students in the rest of Ontario to report their weight was **about right** (75.3% (70.3%, 79.7%) vs. 66.9% (64.6%, 69.1%)). Students in the rest of Ontario were more likely than students in Ottawa to report that they were **too fat** (23.2% (21.2%, 25.3%) vs. 14.9% (11.2%, 19.6%)).
Social Determinants of Health (for Ottawa sample)		
Sex	There was no difference by sex in the proportion of students who felt their weight was **just right**. Differences between those that felt they were either too thin or too fat are not reportable.	A non-significant, but important difference was observed where females (21.7%* (14.1%, 31.8%)) were more likely than males (8.1%* (5.0%, 12.9%)) to report being **too fat**.
Grades	No differences in body image were observed between students in grades 7-8 and grades 9-12. Differences for those who felt they were too fat are not reportable.	Similarly, there were no differences in body image by grade in 2009.
Family SES	A non-significant, but important difference was observed whereby high SES students (75.1% (71.1%, 78.7%)) were more likely to report being **about the right size** compared to low SES students (58.6% (43.3%, 72.4%)).	Family SES was not available in 2009.

	Youth body image in 2011 (Grades 7 to 12)	Historical patterns in youth body image (2009 vs. 2011)
Father's education	No differences in body image were observed by paternal education level.	Similarly, there were no differences in body image by paternal education in 2009.
Mother's education	A non-significant, but important difference was observed whereby students who reported that their mothers had some post-secondary education (74.2% (67.9%, 79.6%)) were more likely to report being **about the right size** compared to students whose mothers had a high school education or less (58.2% (46.7%, 68.8%)).	No differences in body image were observed by maternal education level in 2009.
Immigration status	No differences in body image were observed between immigrants and non-immigrants.	Similarly, there were no differences in body image by immigration status in 2009.
Language spoken at home	No differences in body image were observed by language spoken at home.	Similarly, there were no differences in body image by language spoken at home in 2009.
Physical activity level	A non-significant, but important difference as observed whereby students who reported they were active on a daily basis (85.4% (70.9%, 93.4%)) were more likely to report being **about the right size** compared to students were active for 1-3 days in the previous week (66.5% (57.3%, 74.5%)).	A non-significant, but important difference was observed whereby students who reported they were active on a daily basis (82.5% (73.3%, 89.0%)) or who were active for 4-6 days in the previous week (80.0% (74.3%, 84.6%)) were more likely to report being **about the right size** than inactive students (45.7%* (26.9%, 65.8%)).

	Youth body image in 2011 (Grades 7 to 12)	Historical patterns in youth body image (2009 vs. 2011)
Body mass index	Students who were overweight or obese were more likely than students who were neither overweight nor obese to report that they felt they were **too fat** (45.7%* (30.2%, 62.1%) vs. 10.0%* (6.9%, 14.3%)). A non-significant, but important difference was observed where students who were neither overweight nor obese were more likely than students who were overweight or obese to report that they felt they were **about the right size** (75.6% (72.1%, 78.8%) vs. 53.7% (37.3%, 69.4%)).	A similar pattern in body image by BMI category was observed in 2009.

*=Interpret with caution due to high sampling variability. BMI – body mass index, SES – socio-economic status.

Figure 31. Percentage of students in grades 7 to 12 who reported that they thought they were 'too fat' by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Post-sec. – post-secondary, SES – socio-economic status.

Youth Intentions toward Body Weight

During adolescence, issues surrounding body image and weight become increasingly prevalent. For teenagers, especially females, there is a danger of becoming preoccupied with their sense of body weight satisfaction, which can cause subsequent physical and mental health problems.[87] The 2009 and 2011 OSDUHS asked students in grades 7 to 12 what they were doing about their body weight. Students were asked to identify whether they were 1) not doing anything, 2) trying to lose weight, 3) trying to keep from gaining weight, or 4) trying to gain weight.

HIGHLIGHTS

- Two thirds of grade 7 to 12 students in Ottawa (65%) reported that they were trying to control their weight either by avoiding weight gain, trying to lose weight or trying to gain weight.
- Just over one third (35%) of grade 7 to 12 students in Ottawa reported that they were not doing anything about their weight.
- In 2009, grade 7 to 12 students in Ottawa were less likely than grade 7 to 12 students in the rest of Ontario to report trying to **lose** weight.
- Females were more likely than males to report that they were trying to **lose** weight.
- Grade 7 to 12 students who reported as neither overweight nor obese were more likely to report **not doing anything** about their weight than students who were overweight or obese.
- There was some indication that grade 7 to 8 students (vs. students in grades 9 to 12) and those with higher family SES were more likely to report **not doing anything** about their weight; however, additional data are needed to confirm whether these differences truly exist.
- No significant differences in intention toward body weight were observed by parental education level, immigration status, or physical activity level.

Table 40. Intentions toward body weight among students (grades 7 to 12) by social determinants of health, Ottawa, 2009 – 2011

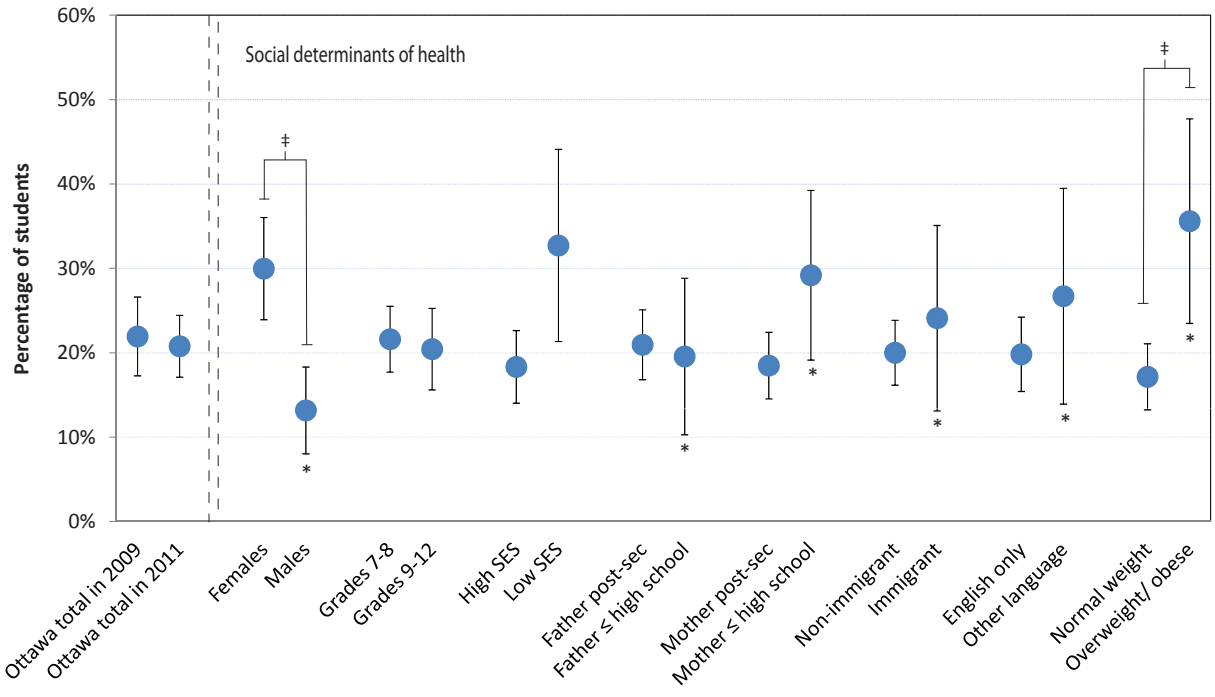
	Youth intentions toward body weight in 2011 (Grades 7 to 12)	Historical patterns in youth intentions toward body weight (2009 vs. 2011)
Ottawa students	Overall, 34.8% (30.1%, 39.8%) of students in Ottawa reported that they were **not doing anything** about their weight. An additional 27.3% (22.3%, 32.9%)) of students reported that they were trying to **keep from gaining** weight, 20.8% (17.1%, 25.0%) were trying to **lose weight**, and 17.1% (12.7%, 22.7%) reported that they were trying to **gain weight.**	A similar pattern was observed in 2009.
Ontario less Ottawa	Data are not releasable for 2011 at the time of this publication.	Students in the rest of Ontario were more likely than students in Ottawa to report that they were **trying to lose weight** (29.4% (27.5%, 31.4%) vs. 21.9% (17.3%, 27.5%)). A non-significant pattern was observed where students in Ottawa (40.0% (36.2%, 44.0%)) were more likely to report **not doing anything** about their weight compared to students in the rest of Ontario (35.0% (32.7%, 37.4%)).
Social Determinants of Health (for Ottawa sample)		
Sex	Females were more likely than males to report that they were trying to **lose weight** (30.0% (23.9%, 36.8%) vs. 13.2%* (8.0%, 20.9%)).	In 2009, a similar pattern was observed but with the addition that males were more likely than females to report that they were trying to **gain** weight (25.3% (21.1%, 30.1%) vs. 7.5%* (4.2%, 13.1%)).
Grades	A non-significant difference was observed whereby students in grades 7-8 (41.4% (38.0%, 44.8%)) were more likely to report **not doing anything** about their weight compared to students in grades 9-12 (32.1% (26.7%, 38.0%)).	In 2009, no differences in intentions toward body weight were observed between students in grades 7-8 and grades 9-12.

	Youth intentions toward body weight in 2011 (Grades 7 to 12)	Historical patterns in youth intentions toward body weight (2009 vs. 2011)
Family SES	A non-significant, but important difference pattern was observed whereby high SES students (38.0% (32.2%, 44.2%)) were more likely to report **not doing anything** about their weight compared to low SES students (20.4%* (11.9%, 32.6%)).	Family SES was not available in 2009.
Father's education	No differences in intentions toward body weight were observed by paternal education level.	Similarly, there were no differences in intentions toward body weight by paternal education level.
Mother's education	No differences in intentions toward body weight were observed by maternal education level.	Similarly, there were no differences in intentions toward body weight by maternal education level.
Immigration status	No differences in intentions toward body weight were observed between immigrants and non-immigrants.	Similarly, there were no differences in intentions toward body weight by immigration status in 2009.
Language spoken at home	No differences in intentions toward body weight were observed by language spoken at home.	In 2009, a non-significant difference was observed whereby students who reported speaking English or French at home (40.5%* (23.8%, 59.8%)) were more likely to report **trying to keep from gaining** weight compared to students who reported speaking only English at home (20.2% (15.9%, 25.3%)).
Physical activity level	No differences in intentions toward body weight were observed between physical activity levels.	Similarly, there were no differences in intentions toward body weight between physical activity levels in 2009.

	Youth intentions toward body weight in 2011 (Grades 7 to 12)	Historical patterns in youth intentions toward body weight (2009 vs. 2011)
Body mass index	Students who reported as neither overweight nor obese (38.5% (33.0%, 44.4%)) were more likely to report **not doing anything** about their weight than students who were overweight or obese (18.3%* (12.0%, 26.8%)). Students who reported as overweight or obese (35.6%* (23.5%, 49.9%)) were more likely to report **trying to lose** weight compared to students who were neither overweight nor obese (17.2% (13.2%, 21.9%)).	Students who reported as overweight or obese (41.7% (31.2%, 53.0%)) were more likely to report they were trying to **lose weight** than students who were neither overweight nor obese (16.0% (11.8%, 21.4%)). A non-significant difference was observed whereby students who reported as neither overweight nor obese (44.1% (38.5%, 49.8%)) were more likely to report **not doing anything** about their weight compared to students who were overweight or obese (25.8%* (15.4%, 39.8%)).

*=Interpret with caution due to high sampling variability. SES – socio-economic status.

Figure 32. Percentage of students in grades 7 to 12 who reported they were trying to lose weight by social determinants of health, Ottawa, 2011.



Data source: Public Health Monitoring of Risk Factors in Ontario – OSDUHS (2009 and 2011), Centre for Addictions and Mental Health.
*=Interpret with caution due to high sampling variability; ‡denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Post-sec. – post-secondary, SES – socio-economic status.

Body Mass Index among Adults

BMI is ratio of weight-to-height. While not a direct measure, it has been shown to be significantly correlated with total body fat content and it can be used to assess individual health risk. Self-reported height and weight data for Ottawa and Ontario adults (aged ≥18 years) were collected in the CCHS and used to calculate BMI. For adults (≥18 years, excluding pregnant and lactating women), BMI was classified as: underweight (<18.5 kg/m^2); healthy/normal weight (18.5-24.9 kg/m^2); overweight (25.0-29.9 kg/m^2); and obese (≥30 kg/m^2).

A J- or U-shaped relationship between BMI and mortality has been observed where the risk of mortality is elevated in persons with a low BMI (underweight) and increases with BMIs above 25 kg/m^2. All cause mortality, especially from cardiovascular disease, increased by 50 to 100 percent for obese persons compared to those in the healthy weight category.[80]

HIGHLIGHTS

- Half (52%) of Ottawa adults (aged ≥18 years) were classified as overweight or obese.
- In 2009/10, 225,700 adults or 34% reported that they were overweight and 119,300 or 18% reported that they were obese. These numbers are based on self-report measures and evidence suggests that the prevalence of overweight and obesity in Ottawa is likely higher.
- The prevalence of self-reported overweight and obesity in Ottawa was similar to the rest of Ontario.
- Adult males were more likely to be overweight, while adult females were more likely to be a healthy weight.
- The probability of being overweight or obese increased with age.
- The pattern of leisure time physical activity by BMI categories appears to be U-shaped. Obese adults were more likely than normal or overweight adults to be inactive during their leisure time and there was some indication that underweight adults are also inactive during leisure time.
- No significant differences in adult BMI category were observed by income, urban or rural residence or immigration status.

Table 41. Body mass index among adults (≥18 years) by social determinants of health, Ottawa, 2005 – 2009/10

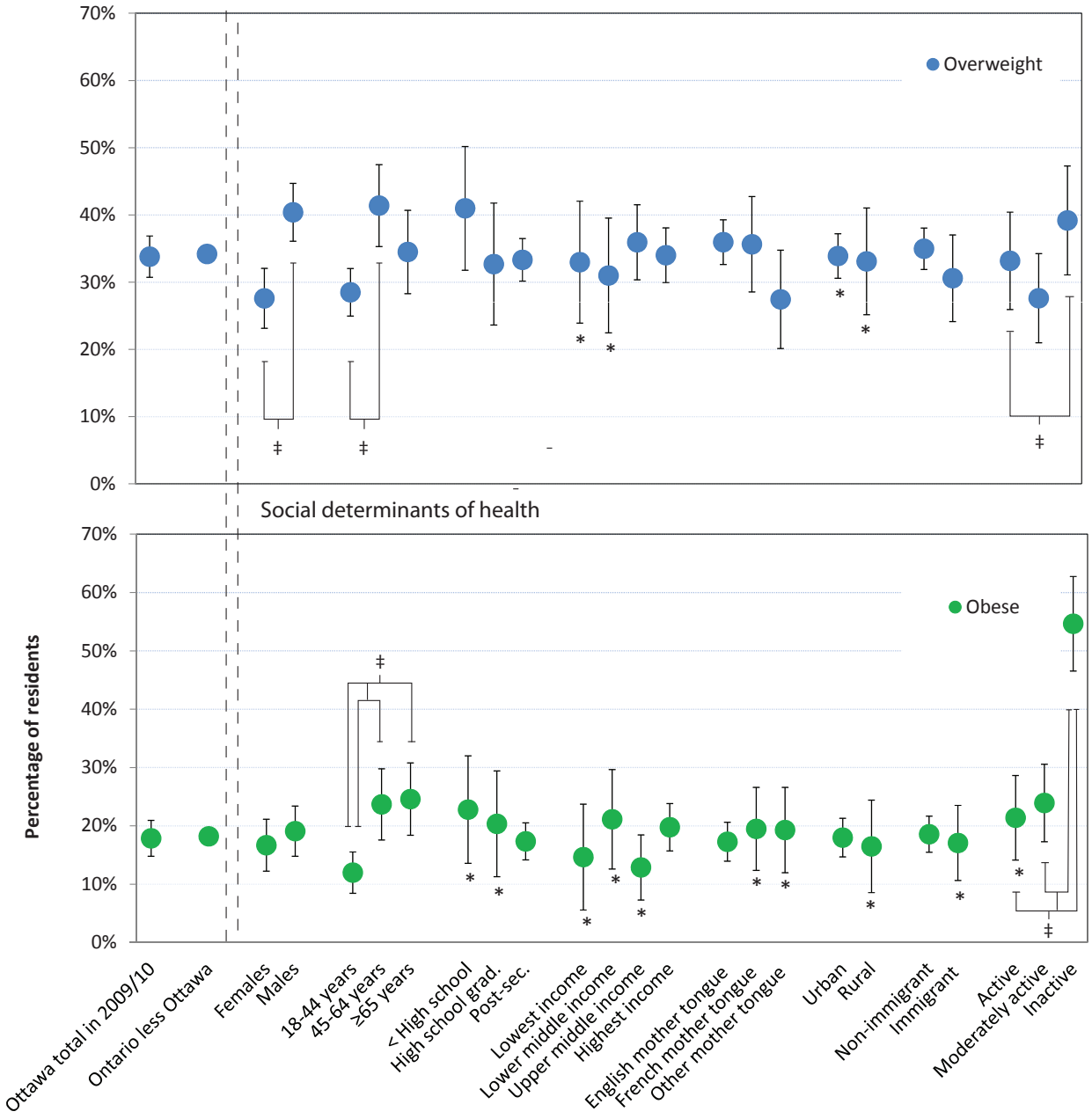
	Body mass index in adults in 2009/10 (aged ≥18 years)	Historical patterns in body mass index (2003 – 2009/10)
Ottawa sample	Approximately 345,000 Ottawa residents (51.7% (48.4%, 55.1%)) were classified as overweight or obese (overweight: 225,700 or 33.8% (30.4%, 37.2%), obese: 119,300 or 17.9% (14.8%, 21.0%)). 299,400 or 44.9% (41.5%, 48.3%) of adults were normal weight. 3.4%* (1.9%, 4.9%) of adults were underweight.	Between 2003 and 2009/10, there were no differences in BMI categories for Ottawa adults.
Rest of Ontario	Ottawa adults were not statistically different from the rest of the province, where 52.4% (51.4%, 53.3%) of adults report being overweight or obese.	There were no differences in BMI categories between Ottawa adults and adults across the rest of Ontario in 2003 and 2007/08. In 2005, Ottawa adults were more likely to be normal weight and less likely to be obese than adults across the rest of Ontario.
Social Determinants of Health (for Ottawa sample)		
Sex	Ottawa males (40.4% (34.8%, 45.8%)) were more likely than females (27.6% (23.6%, 31.6%)) to report being overweight. Ottawa females (51.9% (46.7%, 57.1%)) were more likely than males (37.6% (32.5%, 42.6%)) to report being normal weight.	Between 2003 and 2007/08, females were more likely than males to be normal weight and less likely to be overweight. In 2007/08, there were also differences in the obese and underweight categories, where males were more likely to be obese and females were more likely to be underweight.
Age	Adults aged 18-44 years (54.2% (49.8%, 58.6%)) were more likely than those aged 45-64 years (34.1% (28.5%, 39.8%)) and seniors (38.1% (31.3%, 44.9%)) to report being normal weight and less likely to report being overweight or obese.	Similar patterns were observed between 2005 and 2007/08. In 2003, adults 18-44 years were more likely to be normal weight and less likely to be overweight than adults 45-64 years.

	Body mass index in adults in 2009/10 (aged ≥18 years)	Historical patterns in body mass index (2003 – 2009/10)
Education	There were no differences in BMI categories by education.	There were no differences in BMI categories by education in 2007/08. In 2005, adults with less than high school education were more likely to be obese (24.2% (15.9%, 32.4%)) than those with post-secondary education (10.5% (8.4%, 12.6%)). In 2003, there was some indication that adults with less than high school education were more likely to be obese (20.7% (13.3%, 28.2%)) than those who had graduated from high school (11.5% (6.7%, 16.2%)); however this difference was not statistically significant.
Household income	There were no differences in BMI categories by household income.	There were no differences in BMI categories by household income between 2003 and 2007/08.
Urban/rural	There were no differences in BMI categories by urban or rural residence.	There were no differences in BMI categories by urban or rural residence between 2003 and 2007/08.
Mother tongue language	There were no differences in BMI categories by mother tongue language.	In 2007/08, residents with mother tongue language other than English or French were less likely to be obese (7.6%* (4.2%, 10.9%)) compared to those with English mother tongue (16.8% (13.0%, 20.6%)). There were no differences in BMI categories by mother tongue language in 2003 and 2005.
Immigration	There were no differences in BMI categories between immigrants and non-immigrants.	There were no differences in BMI categories between immigrants and non-immigrants between 2003 and 2007/08.

	Body mass index in adults in 2009/10 (aged ≥18 years)	Historical patterns in body mass index (2003 – 2009/10)
Leisure time physical activity level	The pattern of leisure time physical activity by BMI categories appears to be U-shaped. Obese adults (54.6% (46.6%, 62.8%)) were more likely than normal (37.2% (31.7%, 42.7%)) or overweight adults (39.2% (33.7%, 44.7%)) to be inactive during their leisure time and there was some indication that underweight adults were also inactive during leisure time (61.6%*(39.3%, 83.9%)).	This U-shaped pattern emerged in previous years. Obese and under-weight adults reported the highest levels of inactivity during leisure time (not statistically significant in 2003, but significant in 2005, underweight difference not significant in 2007/08).

*=Interpret with caution due to high sampling variability. BMI – body mass index.

Figure 33. Percentage of overweight and obese adults by social determinants of health, Ottawa, 2009/10.



Data source: Canadian Community Health Survey (2009/2010). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, post-sec. – post-secondary.

Waist Circumference

Waist circumference is associated with increased abdominal fat and is an important indicator of health risks associated with overweight and obesity.[88] Adults with an unhealthy waistline measurement, indicating an unhealthy level of abdominal fat, have an increased risk for several chronic conditions, including heart disease and Type 2 Diabetes.

The waist circumference module in the RRFSS aims to monitor the self-reported waist circumference of the adult population (aged ≥18 years) in order to assess their risk of disease. Waist circumference calculations are derived from respondents' self-reported waistline measurement and pant size, as well as the fit of their pants (i.e. loose, just right, or snug). To calculate the unhealthy predicted waist circumference, the derived measurements were dichotomized as healthy or unhealthy based on the *Canadian Guidelines for Body Weight Classification in Adults*. For men, an unhealthy waist circumference is any measurement >102cm and for women it is any measurement >88cm.

Self-reported waist circumference is typically underestimated and underreported as respondents may not know the size of their waist.[89] In addition, waist circumference measurement as self-reported using pant size has the potential for error as larger waists can sit over the top of the pant and pant sizing is not always standardized.

Male Waist Circumference

HIGHLIGHTS

- One quarter (24%) of males (aged ≥18 years) living in Ottawa reported an unhealthy waist circumference.
- The prevalence of unhealthy waist circumference among males increased with age.
- There was some indication that the prevalence of unhealthy waist circumferences decreased with income.
- Approximately 20% of overweight males reported having an unhealthy waist circumference compared to almost 70% of obese males.
- No significant differences in male waist circumference were seen by education level or mother tongue language.

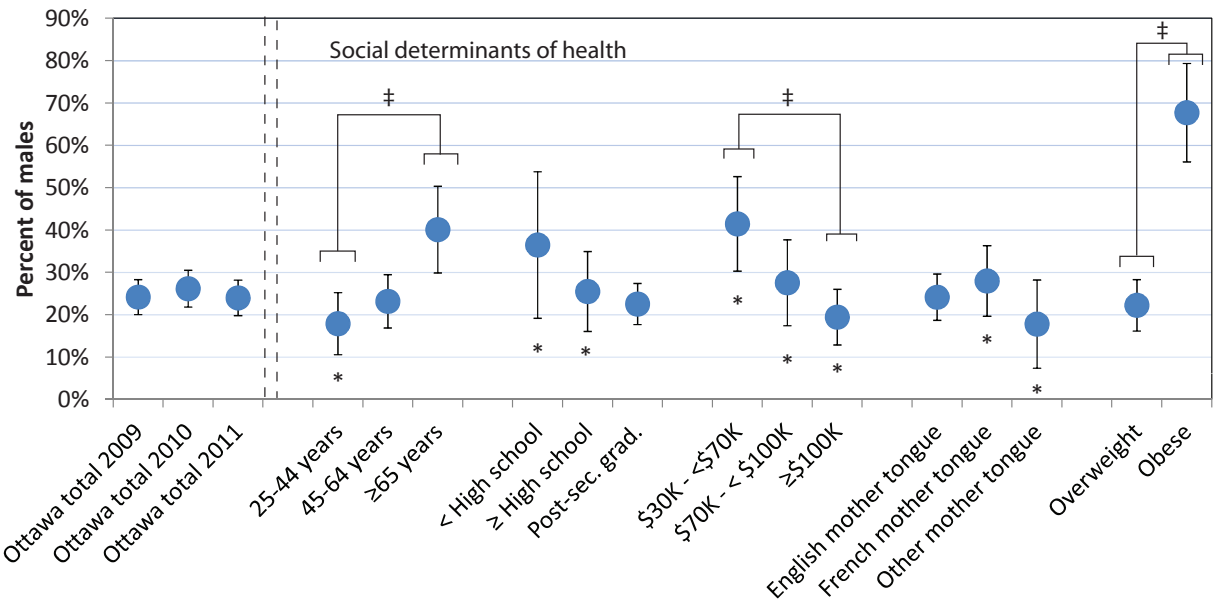
Table 42. Self-reported waist circumference among adult males (≥18 years) by social determinants of health, Ottawa, 2009 – 2011

	Waist circumference in males (aged ≥18 years) in 2011	Historical patterns in waist circumference (2009 - 2010)
Total sample	24.0% (19.8%, 28.2%) of males living in Ottawa reported having an unhealthy waist circumference (>102cm). 76.0% (71.8%, 80.2%) self-reported a healthy waist circumference (≤102cm).	Similar patterns in self-reported waist circumference among males were observed between 2009 and 2010.
Social Determinants of Health		
Age	There was some indication that self-reported waist circumference increased with increasing age. 18.2*% (10.6%, 25.2%) of males 25-44 years, 23.2% (16.9%, 29.5%) of males 45-64 years, and 40.1% (29.9%, 50.3%) of senior males reported an unhealthy waist circumference. Data for males aged 18-24 years were not releasable.	Similar patterns were observed in 2009 and 2010.
Education	No differences in waist circumference were observed by education levels.	No differences in waist circumference were observed by education levels in 2009 and 2010
Household income	There was some indication that lower income males had higher waist circumferences than higher income males. Males living with a household income of $30K to <$70K were more likely than those living with an income of ≥$100K were more likely to report an unhealthy waist circumference (41.5% (30.3%, 52.6%) vs. 19.5% (12.9%, 26.0%)). The prevalence of unhealthy waist circumference in the lowest income category (<$30K) was not reportable.	No differences in waist circumference were observed by income levels in 2009 and 2010.
Mother tongue language	No differences in waist circumference were observed by mother tongue language.	No differences in waist circumference were observed by mother tongue language in 2009 and 2010.

	Waist circumference in males (aged ≥18 years) in 2011	Historical patterns in waist circumference (2009 - 2010)
Body mass index	67.7% (56.1%, 79.3%) of obese males reported having an unhealthy waist circumference compared to 22.2% (16.2%, 28.3%) of overweight males. Data for unhealthy waist circumference among underweight and normal weight males were not releasable in 2011.	Similar patterns in waist circumference were observed by BMI category in 2009 and 2010.

*=Interpret with caution due to high sampling variability. BMI – body mass index, K – thousand.

Figure 34. Percent of adult males (≥18 years) with an unhealthy self-reported waist circumference (>102cm) by social determinants of health, Ottawa, 2011.



Data source: Rapid Risk Factor Surveillance System 2009, 2010, 2011.
*=Interpret with caution due to high sampling variability. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.
Grad – graduate, K – thousand, post-sec. – post-secondary.

Female Waist Circumference

HIGHLIGHTS

- Almost 30% of adult females (aged ≥18 years) living in Ottawa reported having an unhealthy waist circumference.
- Among Ottawa females, unhealthy waist circumferences increased with age and BMI category.
- There was some indication that women in the lowest income category (<$30K) were more likely to have an unhealthy waist circumference than those in the highest income category (≥$100K).
- No significant differences in female waist circumference were seen by mother tongue language or education level.

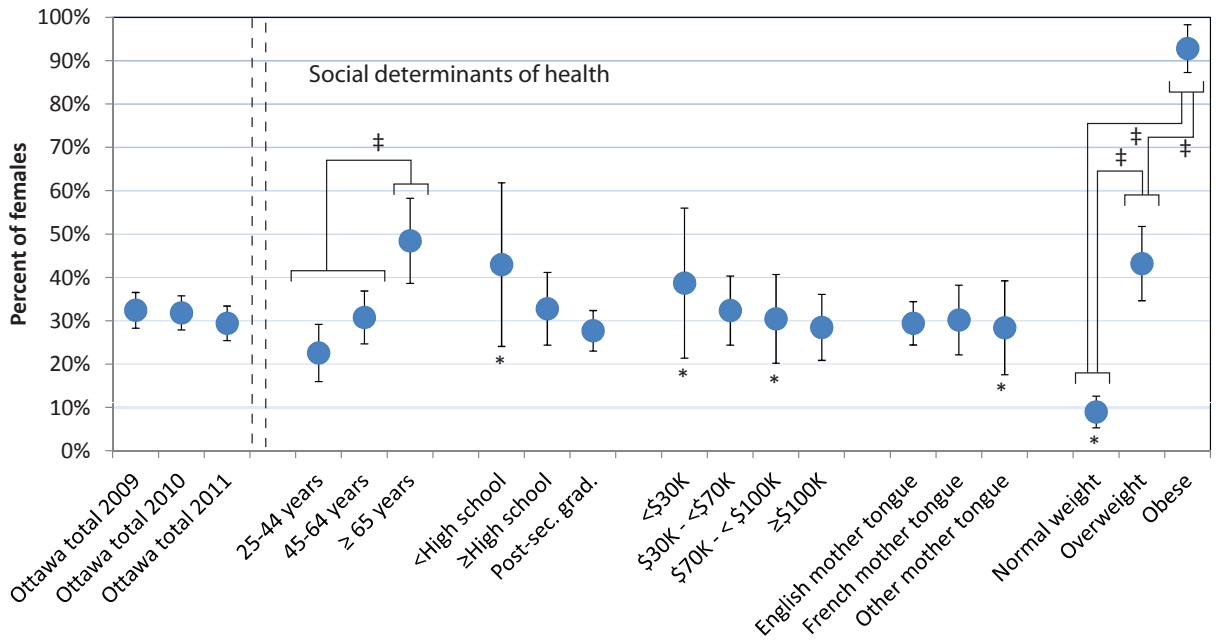
Table 43. Self-reported waist circumference among adult females (≥18 years) by social determinants of health, Ottawa, 2009 – 2011

	Waist circumference among females (aged ≥18 years) in 2011	Historical patterns in waist circumference among females (2009-2011)
Total sample	29.4% (25.4%, 33.4%) of females living in Ottawa reported an unhealthy waist circumference (>88cm). 70.6% (66.6%, 74.6%) of females living in Ottawa reported a healthy waist circumference (≤88 cm)	Similar patterns in self-reported waist circumference among females were observed between 2009 and 2010.
Social Determinants of Health		
Age	There appears to be a linear relationship between age and unhealthy waist circumference among Ottawa females in that the prevalence an unhealthy waist circumference increases with age. 22.6% (16.0%, 29.2%) of females aged 24-44 years, 30.8% (24.7%, 36.9%) of females aged 45-64 years, and 48.4% (38.6%, 58.3%) of female seniors reported an unhealthy waist circumference. Data for 18-24 year olds were not releasable.	Similar patterns were observed in 2009 and 2010.

	Waist circumference among females (aged ≥18 years) in 2011	Historical patterns in waist circumference among females (2009-2011)
Education	There were no differences in unhealthy waist circumference among females by education.	There were no differences in unhealthy waist circumference by education in 2009. In 2010, there was some indication that the prevalence of unhealthy waist circumference increases with education; however, this difference was not significant.
Household income	There were no differences in unhealthy waist circumference among females by household income levels.	In 2009, women in the lowest income category were more likely to have an unhealthy waist circumference than those in the highest income category (<$30K: 44.8% (31.5%, 58.1%), ≥$100K: 20.9% (14.1%, 28.7%)). In 2010, there were no differences in the prevalence of unhealthy waist circumference by household income for women.
Mother tongue language	There were no differences in waist circumference by mother tongue language.	There were no differences in waist circumference by mother tongue language in 2009 and 2010.
Body mass index	There appears to be a relationship between unhealthy waist circumference among females and BMI category. The percent of females who reported an unhealthy waist circumference rises with increasing BMI category from underweight to normal weight to overweight then to obese. 9.0%* (5.3%, 12.6%) of normal weight females reported having an unhealthy waist circumference compared to 43.2% (34.6%, 51.8%) of overweight females and 92.8% (87.3%,98.4%) of obese females. Data for underweight females are not releasable	Similar patterns were observed in 2009 and 2010.

*=Interpret with caution due to high sampling variability. BMI – body mass index.

Figure 35. Percent of adult females (≥18 years) with an unhealthy self-reported waist circumference by social determinants of health, Ottawa, 2011.



Data source: Rapid Risk Factor Surveillance System 2009, 2010, 2011.

*=Interpret with caution due to high sampling variability. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown.

Grad. – graduate, K – thousand, post-sec. – post-secondary.

Adult Body Weight Perception

The self-perception of body weight appropriateness can be used to measure the perceived difference between a person's ideal and actual body size and also a person's satisfaction with their body. Body weight perception is an important component of eating and weight-loss behaviours, and is influenced by demographics, culture and social norms.[90, 91]

The CCHS asked respondents whether they consider themselves overweight, underweight or just about the right body weight.

HIGHLIGHTS

- Less than half (43%) of Ottawa adults (aged ≥18 years) considered themselves overweight.
- Historically, females were more likely than males to consider themselves overweight and less likely to consider themselves underweight.
- Adults who were **active** in their leisure time were less likely to consider themselves overweight compared to adults who were inactive in leisure time.
- Overweight and obese adults were the most likely to consider themselves overweight.
- No significant differences in adult body weight perception were seen by education level, household income, urban or rural residence, or immigration status.

Table 44. Body weight perception among adults (≥18 years) by social determinants of health, Ottawa, 2003 – 2009/10

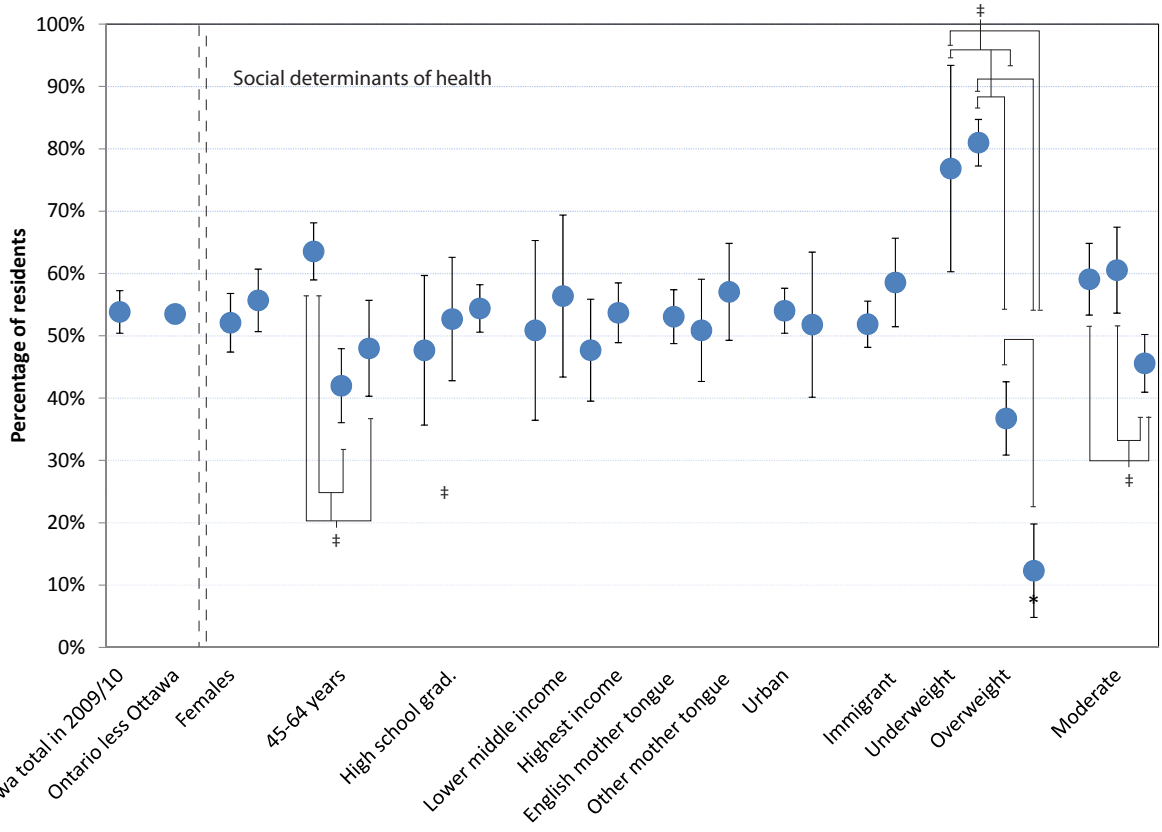
	Body weight perception in adults (aged ≥18 years) in 2009/10	Historical patterns in body weight perception (2003-2007/08)
Total sample	Just over half (53.8% (50.4%, 57.2%)) of Ottawa adults felt that their body weight was **just about right**. 3.0% (2.0%, 3.9%) considered themselves **underweight** and 43.2% (39.8%, 46.6%) considered themselves **overweight**.	Between 2003 and 2009/10, there were no trends in body weight perception for Ottawa adults.
Rest of Ontario	Ottawa adults were not different from the rest of the province, where 53.5% (52.5%, 54.5%) of adults felt that their body weight was **just about right**, 4.3% (3.9%, 4.7%) considered themselves **underweight** and 42.2% (41.2%, 43.1%) considered themselves **overweight**.	In 2005 and 2007/08, Ottawa adults were more likely than adults across the rest of Ontario to consider their body weight **just about right** and less likely to consider themselves **overweight** (2005 only). In 2003, there were no differences in perception of body weight between Ottawa adults and adults across the rest of Ontario.
Social Determinants of Health (for Ottawa sample)		
Sex	There were no differences in perception of body weight by sex.	However, between 2003 and 2007/08, females were more likely to consider themselves **overweight** compared to males and less likely to consider themselves **underweight**. In 2007/08, 44.5% (39.6%, 49.4%) of females considered themselves **overweight** compared to 36.9% (31.8%, 42.1%) of males and 2.1%* (1.0%, 3.1%) of females considered themselves **underweight** compared to 5.5%* (2.9%, 8.1%) of males.

	Body weight perception in adults (aged ≥18 years) in 2009/10	Historical patterns in body weight perception (2003-2007/08)
Age	Adults aged 18-44 were most likely to consider their body weight **just about right** (63.6% (59.0%, 68.1%)) compared to adults 45-64 years (42.0% (36.1%, 47.9%)) and seniors (48.0% (40.4%, 55.7%)).	Similarly, in 2005 and 2007/08, adults aged 18-44 years were most likely to consider their body weight **just about right** and less likely to consider themselves **overweight** compared to adults aged 45-64 years. In 2003, adults aged 18-44 years were less likely to consider themselves **overweight** compared to adults 45-64 years.
Education	There were no differences in perception of body weight by education.	There were no differences in perception of body weight by education between 2003 and 2007/08.
Household income	There were no differences in perception of body weight by household income.	There were no differences in perception of body weight by household income between 2003 and 2007/08.
Urban/rural	There were no differences in perception of body weight by urban or rural residence.	There were no differences in perception of body weight by urban or rural residence between 2003 and 2007/08.
Mother tongue language	There were no differences in perception of body weight by mother tongue language.	In 2007/08, residents with mother tongue language other than English or French (30.1% (23.3%, 36.9%)) were least likely to perceive their body weight as **overweight** (English: 44.8% (40.3%, 49.2%); French: 44.4% (36.3%, 52.5%)). There were no differences in perception of body weight by mother tongue language in 2003 and 2005.
Immigration	There were no differences in perception of body weight between immigrants and non-immigrants.	There were no differences in perception of body weight between immigrants and non-immigrants between 2003 and 2007/08.

	Body weight perception in adults (aged ≥18 years) in 2009/10	Historical patterns in body weight perception (2003-2007/08)
Leisure time physical activity level	Adults who were inactive during their leisure time were more likely to consider themselves **overweight** (50.7% (46.1%, 55.3%)) and less likely to consider themselves **about the right body weight** (45.6% (41.0%, 50.2%)) compared to adults who are active (59.1% (53.3%, 64.8%)) or moderately active during leisure time (60.6% (53.7%, 67.4%)).	In 2005 and 2007/08, adults who were highly active in their leisure time were less likely than those who were moderately active or inactive to consider themselves **overweight** and more likely to consider their body weight **just about right.** In 2003, adults who were highly active in their leisure time were less likely than those who are inactive to consider themselves **overweight** and more likely to consider their body weight **just about right**.
Body mass index	Underweight and normal weight adults were most likely to consider themselves **just about the right** body weight (underweight: 76.8% (60.3%, 93.4%); normal weight: 81.0% (77.3%, 84.7%)). Overweight and obese adults were most likely to consider themselves **overweight** (overweight: 62.9% (57.0%, 68.8%); obese: 87.1% (79.6%, 94.6%)).	A similar pattern was observed between 2003 and 2007/08.

*=interpret with caution due to high sampling variability.

Figure 36. Percentage of adults (≥18 years) who perceive their body weight just about right by social determinants of health, Ottawa, 2009/10.



Data source: Canadian Community Health Survey (2009/10). Ontario Share File. Statistics Canada.
*=Interpret with caution due to high sampling variability; ‡ denotes significant differences between groups. Vertical bars represent 95% confidence intervals. Only reportable comparisons are shown. Grad. – graduate, post-sec. – post-secondary.

GLOSSARY

Confidence interval

Range of values around an estimate of a particular variable within which the true value of the variable in the population is contained with a given probability.[92] In this report, 95% confidence intervals are calculated where appropriate. With a 95% confidence interval it can be said that one is 95% confident that the range of values shown will contain the true value of the variable of interest.

Family SES ladder

In the 2011 OSDUHS a subjective measure of family SES was introduced. This family SES scale is an adolescent-specific measure of subjective social status.[93] The question asks students in grades 7 to 12 to think about where their family would be on a subjective ladder (ten on top (best off) to one on the bottom (worst off)). The family SES ladder was then analysed based on a median split defined as:

- Low SES: students ranked their family between one to six on the ladder; and
- High SES: students ranked their family between seven to ten on the ladder.

Household Income

Household income categories for CCHS indicators are based on household income and the number of people living in the household and are defined as:

- Lowest income: <$15,000 if one or two people or <$20,000 if three or four people or <$30,000 if five or more people;
- Lower middle income: $15,000 to <$30,000 if one or two people or $20,000 to <$40,000 if three or four people or $30,00 to <$60,000 if five or more people;
- Upper middle income: $30,000 to <$60,000 if one or two people or $40,000 to <$80,000 if three or four people or $60,000 to <$80,000 if five or more people;
- Highest income: >$60,000 if one or two people or >$80,000 if three or more people.

Language spoken at home (OSDUHS)

Language spoken at home was categorized as English only, English or French, English/French and another, or other.

Low Income Cut-Off (LICO)

Low income cut-offs (LICOs) are income thresholds, determined by analysing family expenditure data, below which families will devote a larger share of income to the necessities of food, shelter and clothing than the average family would. The approach is essential to estimating an income threshold at which families are expected to spend 20 percentage points more than the average family on food, shelter and clothing. To reflect differences in the costs of necessities among different community and family sizes, LICOs are defined for five categories of community size and seven categories of family size.

To assess residents living below the LICO using the CCHS-related indicators, a combination of the Lowest Income and Lower Middle Income categories (see Household Income definition) are used. These categories are based on household income and the number of people living in the household. However, income data was captured using ranges of income and do not exactly match the LICO.

- <$15,000 if one or two people or <$20,000 if three or four people or <$30,000 if five or more people; $15,000 to <$30,000 if one or two people or $20,000 to <$40,000 if three or four people or $30,00 to <$60,000 if five or more people;

Mother tongue language (CCHS)

Mother tongue language indicates the first official language learned and still understood by the respondent. For this report, the categories include:

- **English:** English only;
- **French:** French or English in combination with French;
- **Other:** Another language plus English and/or French only in combination with another language.

North American Industry Classification System – Canada (NAICS)

Food outlets from the Ottawa Neighbourhood Study were defined using the North American Industry Classification System – Canada (NAICS). The following NAICS codes were used: grocery stores (445110); specialty food stores (4451); convenience stores (44512, 445120, 44711); fast food outlets (722210); and restaurants (722110).

Prevalence

Prevalence refers to the number of cases that exist during a specified time period. It is often used to describe the burden of a disease or condition in a population.

Ready-to-eat processed foods

Ready-to-eat foods bought from a grocery store include items such as BBQ chicken, roast chicken, chicken wings, prepared sandwiches and ribs among others.

Seniors

In this report, seniors refer to those aged 65 years and older.

Socio-economic status

Refers to an individual's position in society and is often expressed using an indicator such as income, level of education attained, occupation, value of dwelling, etc.[92]

Statistical significance

Refers to a situation where an observed difference between two groups is a true difference and is unlikely because of a chance occurrence. In this report, the statistical significance was tested first by looking at chi-square differences between proportions across multiple categories. When significant or approaching

significant multiple comparison tests were used applying a Bonferroni correction factor to assess whether a true difference was being observed. Significance was achieved when the p-value from the Bonferroni correction was less than 0.05. If the uncorrected p-value from the multiple comparisons test was significant, but looses significance following the Bonferroni correction, a non-significant trend was identified in the interpretation.

U-shaped, J-shaped pattern

The term U-shaped or J-shaped refers to the shape of a distribution or curve on a graph, whereby the distribution/curve initially falls, but then rises to a level either similar to the starting point (U-shape) or higher than the starting point (J-shape).

Urban or Rural Residence

The urban-rural classification for CCHS-related indicators identifies whether the respondent lives in an urban or rural area. Urban areas are those continuously built-up areas having a population concentration of 1000 or more and a population density of 400 or more per km^2.

REFERENCES

1. He FJ, Nowson CA, MacGregor GA. Fruit and vegetable consumption and stroke: meta-analysis of cohort studies. Lancet 2006; 367(9507): 320-6.

2. Dauchet L, Amouyel P, Hercberg S, Dallongeville J. Fruit and vegetable consumption and risk of coronary heart disease: a meta-analysis of cohort studies. J Nutr. 2006; 136(10): 2588-93.

3. Carter P, Gray LJ, Troughton J, Khunti K, Davies MJ. Fruit and vegetable intake and incidence of type 2 diabetes mellitus: systematic review and meta-analysis. Br Med J. 2010; 341: c4229.

4. Riboli E, Norat T. Epidemiologic evidence of the protective effect of fruit and vegetables on cancer risk. Am J Clin Nutr. 2003; 78(3): 559S-569S.

5. Fruit and vegetable consumption, 2010. Statistics Canada. 2011. Available from: http://www.statcan.gc.ca/pub/82-625-x/2011001/article/11461-eng.htm

6. Langlois K, Garriguet D. Sugar consumption among Canadians of all ages. Health Rep. 2011;22(3): 1-6.

7. Langlois K, Garriguet D, Findlay L. Diet composition and obesity among Canadian adults. Health Rep. 2009;20(4):1-10.

8. Warburton DER, Charlesworth S, Ivey A, Nettlefold L, Bredin SSD. A systematic review of the evidence for Canada's Physical Activity Guidelines for Adults. Int J Behav Nutr Phys Act. 2010; 7:39.

9. Katzmarzyk PT, Janssen I. The economic costs associated with physical inactivity and obesity in Canada: An update. Can J Appl Physiol. 2004; 29(2): 90-115.

10. Physical activity during leisure time, 2009. Statistics Canada; 2010.

11. Tremblay MS, Warburton DER, Janssen I, Paterson DH, Latimer AE, Rhodes RE, et al. New Canadian Physical Activity Guidelines. Appl Physiol Nutr Metab. 2011; 36(1): 36-46.

12. Colley RC, Garriguet D, Janssen I, Craig CL, Clarke J, Tremblay MS. Physical activity of Canadian adults: Accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. Health Rep. 2011; 22(1):8.

13. Colley RC, Garriguet D, Janssen I, Craig CL, Clarke J, Tremblay MS. Physical activity of Canadian children and youth: Accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. Health Rep. 2011; 22(1).

14. Berenson GS, Srinivasan SR, Wattigney WA, Harsha DW. Obesity and cardiovascular risk in children. Ann NY Acad Sci. 1993; 699: 93-103.

15. Berenson GS, Srinivasan SR, Bao W, Newman WP, Tracey RE, Wattigney WA. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. The Bogalusa heart study. N Engl J Med. 1998; 338: 1650-6.

16. Bigaard J, Frederiksen K, Tjonneland A, Thomsen BL, Overvad K, Heitmann BL, et al. Body fat and fat-free mass and all-cause mortality. Obes Res. 2004; 12(7): 1042-9.

17. Pi-Sunyer FX. The obesity epidemic: pathophysiology and consequences of obesity. Obes Res. 2002;10(Suppl 2): 97S-104S.

18. Obesity in Canada. Canadian Institute for Health Information and the Public Health Agency of Canada; 2011.

19. Katzmarzyk PT, Baur LA, Blair SN, Lambert EV, Oppert J-M, Riddoch C. International conference on physical activity and obesity in children: Summary statement and recommendations. Int J Ped Obes. 2008; 3(1): 3-21.

20. Overweight and obese adults (self-reported), 2009. Statistics Canada; 2010 Jun 15. Report No.: 82-625-X.

21. Canadian Health Measures Survey: Adult obesity prevalence in Canada and the United States. Statistics Canada 2011. Available from: http://www.statcan.gc.ca/daily-quotidien/110302/dq110302c-eng.htm

22. Table 105-0501. Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2011 boundaries) and peer groups. Statistics Canada 2012. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1050501&paSer=&pattern=&stByVal=2&p1=-1&p2=37&tabMode=dataTable&csid=

23. Canadian Health Measures Survey, 2007 to 2009. Statistics Canada, 2011. Available from: http://www.statcan.gc.ca/daily-quotidien/100113/dq100113a-eng.htm

24. World Health Organization. Social determinants of health. 2012. Available from: http://www.who.int/social_determinants/

25. Mikkonen J, Raphael D. Social determinants of health: The Canadian facts. Toronto: York University School of Health Policy and Management; 2010.

26. Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. Breastfeeding and maternal and infant health outcomes in developed Countries. AHRQ publication No. 07-E007. Rockville, MD. Agency for Healthcare Research and Quality, 2007.

27. Horta BL, Rajiv B, Martines JC, Victora CG. Evidence on the long-term effects of breastfeeding: systematic reviews and meta-analyses. World Health Organization, 2007.

28. Kramer MS, Kakuma R. Optimal duration of exclusive breastfeeding. Cochrane Database of Systematic Reviews 2002, Issue 1.

29. Scott JA, Ng SY, Cobiac L. The relationship between breastfeeding and weight status in a national sample of Australian children and adolescents. BMC Public Health. 2012; 12(1): 107.

30. Health Canada. Consultation – Nutrition for Healthy Term Infants: Recommendations from Birth to Six Months – DRAFT. [cited 23 February 2012] Available from: http://www.hc-sc.gc.ca/fn-an/consult/infant-nourrisson/recommendations/index-eng.php

31. Rampersaud GC, Pereira MA, Girard BL, Adams J, Metszi J. Breakfast consumption, weight, and academic performance in children and adolescents. J Am Diet Assoc. 2005; 105: 743-60.

32. Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. Int J Clin Nutr. 2006; 84: 274-88.

33. Hering-Hanit R, Gadoth N. Caffeine-induced headache in children and adolescents. Cephalalgia. 2003; 23: 332-5.

34. Pollack CP, Bright D. Caffeine consumption and weekly sleep patterns in US seventh-, eigth-, and ninth-graders. Pediatrics. 2003; 111(1): 42-6.

35. Savoca MR, Evans CD, Wilson ME, Harshfield GA, Ludwig DA. The association of caffeinated beverages with blood pressure in adolescents. Arch Ped Adol Med. 2004; 158(5): 473-7.

36. McCusker RR, Goldberger BA, Cone EJ. Caffeine content of energy drinks, carbonated sodas, and other beverages. J Anal Toxic. 2006; 30: 112-4.

37. Caffeine. Health Canada, 2011. Available from: http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/food-aliment/caffeine-eng.php

38. He FJ, Nowson CA, MacGregor GA. Fruit and vegetable consumption and stroke: meta-analysis of cohort studies. Lancet. 2006; 367(9507): 320-6.

39. Dauchet L, Amouyel P, Hercberg S, Dallongeville J. Fruit and vegetable consumption and risk of coronary heart disease: a meta-analysis of cohort studies. J Nutr. 2006; 136(10): 2588-93.

40. Carter P, Gray LJ, Troughton J, Khunti K, Davies MJ. Fruit and vegetable intake and incidence of type 2 diabetes mellitus: systematic review and meta-analysis. Br Med J. 2010; 341: c4229.

41. Riboli E, Norat T. Epidemiologic evidence of the protective effect of fruit and vegetables on cancer risk. Am J Clin Nutr. 2003; 78(3): 559S-69S.

42. Anderson JW, Smith BM, Gustafson NJ. Health benefits and practical aspects of high-fiber diets. Am J Clin Nutr. 1994; 59(suppl): 1242S-7S.

43. 5D Vegetable and fruit and consumption. Association of Public Health Epidemiologists of Ontario, 2010. Available from: http://www.apheo.ca/index.php?pid=128

44. Statistics Canada. Canadians spending more on eating out. 2006. Available from: http://www41.statcan.ca/2006/0163/ceb0163_002-eng.htm

45. Aranceta J, Moreno B, Moya M, Anadon A. Prevention of overweight and obesity from a public health perspective. Nutr Rev. 2009; 67(Suppl.1): S83-8.

46. Swinburn BA, Caterson I, Seidell JC, James WPT. Diet, nutrition and the prevention of excess weight gain and obesity. Public Health Nutr. 2004; 7(1A): 123-46.

47. Sallis JF, Glanz K. Physical activity and food environments: solutions to the obesity epidemic. Milbank Quarterly. 2009; 87(1): 123-54.

48. Astrup A, Dyerberg J, Selleck M, Stender S. Nutrition transition and its relationship to the development of obesity and related chronic diseases. Obes Rev. 2008; 9(Suppl. 1): 48-52.

49. Popkin M, Adair LS, Ng SW. Global nutrition transition and the pandemic of obesity in developing countries. Nutr Rev. 2011; 70(1): 3-21.

50. Food and Agriculture Organisation. Report of the World Food Summit 2002. Rome: Food and Agriculture Organisation, 2002. Available from: http://www.fao.org/docrep/003/w3548e/w3548e00.htm

51. Davis B, Tarasuk V. Hunger in Canada. Agriculture Human Values. 1994; 11(4): 50-7.

52. Dishman RK, Washburn RA, Schoeller DA. Measurement of physical activity. QUEST 2001; 53: 295-309.

53. Prince SA, Adamo KB, Hamel ME, Hardt J, Connor Gorber S, Tremblay M. A comparison of direct versus self-report measures for assessing physical activity in adults: a systematic review. Int J Behav Nutr Phys Act. 2008, 5:56.

54. Janssen I, LeBlanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. Int J Behav Nutr Phys Act. 2010; 7(40).

55. Tremblay MS, Warburton DER, Janssen I, Paterson DH, Latimer AE, Rhodes RE, et al. New Canadian Physical Activity Guidelines. Appl Physiol Nutr Metab. 2011; 36(1): 36-46.

56. Bailey R. Physical education and sport in schools: a review of benefits and outcomes. J School Health. 2006; 76(8): 397-401.

57. International Physical Activity Questionnaire. Available from: https://sites.google.com/site/theipaq/

58. Faulkner GEJ, Buliung RN, Flora PK, Fusco C. Active school transport, physical activity levels and body weight of children and youth: A systematic review. Prev Med. 2009; 48(1): 3-8.

59. Active Ottawa Actif. Physical activity evaluation report. Ottawa Public Health: Ottawa, Ontario; 2010.

60. Tremblay MS, LeBlanc AG, Kho ME, Saunders TJ, Larouche R, Colley RC, et al. Systematic review of sedentary behaviour and health indicators in school-aged children and youth. Int J Behav Nutr Phys Act. 2011; 8:98.

61. Sedentary Behaviour Research Network. 2012. Letter to the Editor: Standardized use of the terms "sedentary" and "sedentary behaviours". Appl Physiol Nutr Metab. (in press).

62. Lowry R, Wechsler H, Galuska DA, Fulton JE, Kann L. Television viewing and its associations with overweight, sedentary lifestyle, and insufficient consumption of fruits and vegetables among US high school students: differences by race, ethnicity, and gender. J School Health. 2002; 72:413–21.

63. Hu FB, Leitzmann MF, Stampfer MJ, Colditz GA, Willett WC, Rimm EB. Physical activity and television watching in relation to risk for type 2 diabetes mellitus in men. Arch Intern Med. 2001; 161: 1542-8.

64. Hu FB, Li TY, Colditz GA, Willett WC, Manson JE. Television watching and other sedentary behaviors in relation to risk of obesity and type 2 diabetes mellitus in women. J Am Med Assoc. 2003; 289: 1785-91.

65. Hu FB. Sedentary lifestyle and risk of obesity and type 2 diabetes. Lipids. 2003; 38(2): 103-8.

66. Dunstan DW, Salmon J, Owen N, Armstrong T, Zimmet PZ, Welborn TA, et al. Associations of TV viewing and physical activity with the metabolic syndrome in Australian adults. Diabetologia. 2005; 48(11): 2254-61.

67. Ford ES, Kohl HW 3rd, Mokdad AH, Ajani UA. Sedentary behavior, physical activity, and the metabolic syndrome among U.S. adults. Obes Res. 2005; 13(3): 608-14.

68. Grøntved A, Hu FB. Television viewing and risk of type 2 diabetes, cardiovascular disease, and all-cause mortality: a meta-analysis. J Am Med Assoc. 2011; 305(23): 2448-55.

69. Lakerveld J, Dunstan D, Bot S, Salmon J, Dekker J, Nijpels G, et al. Abdominal obesity, TV-viewing time and prospective declines in physical activity. Prev Med. 2011; 53(4-5): 299-302.

70. Shields M, Tremblay MS. Sedentary behaviour and obesity. Health Rep. 2008; 19(2): 19-30.

71. Shields M, Tremblay MS. Screen time among Canadian adults: a profile. Health Rep. 2008; 19(2): 31-43.

72. Canadian Society for Exercise Physiology. Canadian Sedentary Behaviour Guidelines for Children and Youth. 2011 Feb. [cited March 2012]. Available from: http://www.csep.ca/english/view.asp?x=804

73. Bauman A, Ainsworth BE, Sallis JF, Hagströmer M, Craig CL, Bull FC, et al. The descriptive epidemiology of sitting. A 20-country comparison using the International Physical Activity Questionnaire (IPAQ). Am J Prev Med. 2011; 41(2): 22835.

74. van Uffelen JG, Wong J, Chau JY, van der Ploeg HP, Riphagen I, Gilson ND, et al. Occupational sitting and health risks: a systematic review. Am J Prev Med. 2010; 39(4): 379-88.

75. Dunstan D, Kingwell B, Larsen R, Healy G, Cerin E, Hamilton M, et al. Breaking up prolonged sitting reduces postprandial glucose and insulin responses. Diabetes Care; epub ahead of print: February 28, 2012.

76. Nygaard H, Tomten S, Høstmark AT. Slow postmeal walking reduces postprandial glycemia in middle –aged women. J Appl Physiol Nutr Metab. 2009; 34: 1087-92.

77. Tudor-Locke C, Bassett DR. How many steps/day are enough? Preliminary pedometer indices for public health. Sports Med. 2004; 34(1): 1-8.

78. Katzmarzyk PT. 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children [2. Epidemiology of obesity]. Can Med Assoc J. 2007; 176(8 Suppl): S1-13.

79. Hramiak I, Leither L, Paul TL, Ur E. 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children [6. Assessment of obesity and its complications in adults]. Can Med Assoc J. 2007; 176(8 Suppl): S1-13.

80. NIH, NHLBI Obesity Education Initiative. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. September 1998. Available from: http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf

81. Connor Gorber S, Tremblay M, Moher D, Gorber B. A comparison of direct vs. self-report measures for assessing height, weight and body mass index: a systematic review. Obes Rev. 2007; 8(4): 307-26.

82. Shields M, Connor Gorber S, Tremblay M. Estimates of obesity based on self-report versus direct measures. Statistics Canada: Ottawa, Canada. 2008. Catalogue no. 82-003-X.

83. Dietz W. Health consequences of obesity in youth: childhood predictors of adult disease. Pediatrics. 1998; 101(suppl 2): 518-25.

84. World Health Organization. 2007. Growth reference data for 5-19 years. Available from: http://www.who.int/growthref/en/

85. Neumark-Sztainer D, Paxton SJ, Hannan PJ, Haines J, Story M. Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. J Adol Health. 2006; 39(2): 244-51.

86. Kostanski M, Gullone E. Adolescent body image dissatisfaction: relationships with self-esteem, anxiety, and depression controlling for body mass. J Child Psychol Psych. 1998; 39(2): 255-62.

87. Paglia-Boak A, Mann RE, Adlaf EM, Beitchman JH, Wolfe D, Rehm R. The mental health and well-being of Ontario students, 1991-2009: Detailed OSDUHS findings. (CAMH Research Document Series No. 29). Toronto, ON: Centre for Addiction and Mental Health; 2010. Available from: http://www.camh.net/Research/Areas_of_research/Population_Life_Course_Studies/OSDUS/Detailed_MHReport_2009OSDUHS_Final_Corrected.pdf

88. Health Canada. Canadian Guidelines for Body Weight Classification in Adults, 2003. Available from: http://www.hc-sc.gc.ca/fn-an/nutrition/weights-poids/guide-ld-adult/weight_book_tc-livres_des_poids_tm-eng.php#a3.3

89. Battram DS, Beynon C, He M. The reliability and validity of using clothing size as a proxy for waist circumference measurement in adults. Appl Physiol Nutr Metab. 2011; 36: 183-90.

90. Chang VW, Christakis NA. Self-perception of weight appropriateness in the United States. Am J Prev Med. 2003; 24(4): 332-9.

91. Burke MA, Heiland FW, Nadler CM. From "overweight" to "about right": evidence of a generational shift in body weight norms. Obes. 2010; 18(6): 1226-34.

92. A dictionary of epidemiology. 5 ed. Oxford: Oxford University Press; 2008.

93. Goodman E, Alder NE, Kawachi I, Frazier AL, Huang B, Colditz GA. Adolescents' perceptions of social status: Development and evaluation of a new indicator. Pediatrics. 2001; 108(2):e31.